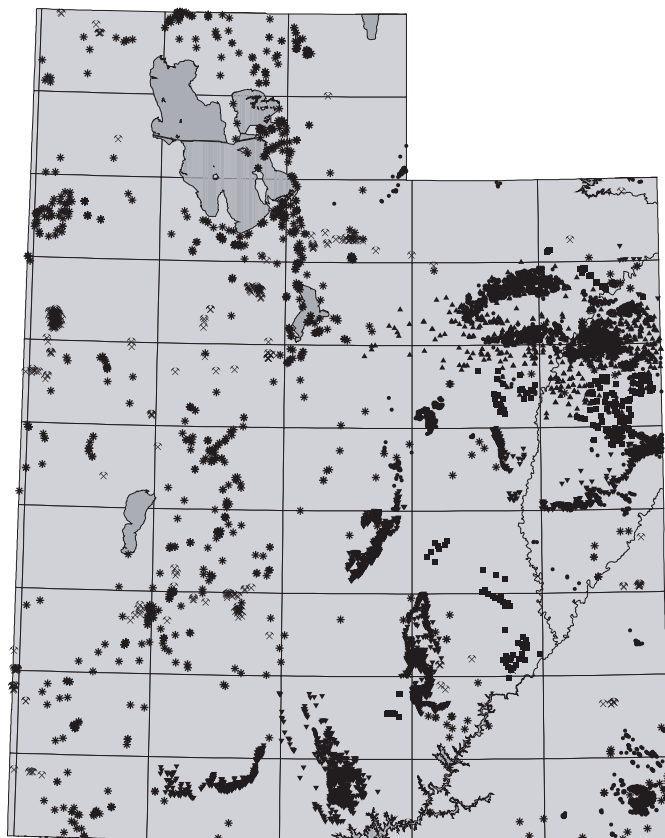


A SUMMARY OF THE GEOLOGIC RESOURCE ATLAS OF UTAH

compiled by
Douglas A. Sprinkel
Utah Geological Survey



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UTAH GEOLOGICAL SURVEY
a division of
Utah Department of Natural Resources



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A SUMMARY OF THE *GEOLOGIC RESOURCE ATLAS OF UTAH*

Compiled by
Douglas A. Sprinkel

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Utah Department of Natural Resources

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Wildcat Mountain and part of Currie Quadrangles	Q10
Fish Springs and part of Kern Mountains Quadrangles	Q13
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ABSTRACT

This is a summary of a digital compilation of the energy, mineral, and water-rights locations in Utah that will be released later on compact disk (CD). It was developed to summarize the spatial data that are currently available through the Utah Geological Survey (UGS) and other governmental agencies. The atlas was also developed to illustrate the distribution and number of these locations in each of the 30 x 60-minute quadrangle maps covering Utah. The information in the atlas can be used by industry, decision-makers, and other interested parties to help identify potential exploration trends and land-use issues. However, a comprehensive resource assessment is needed to fully evaluate the geologic resources or land-use conflicts of any area, but an atlas like this is the first step in any comprehensive resource evaluation.

Several Geographic Information Systems themes, or map layers, were combined to create the maps in the atlas, which represent about 400 megabytes of spatial data. Basic geographic spatial data such as roads, airports, and cities were provided by the Utah Automated Geographic Reference Center, Utah School and Institutional Trust Lands Administration, and the U.S. Census Bureau. Geologic-based spatial data are mostly from the database files of the Utah Geological Survey (a division of the Utah Department of Natural Resources) and some files of the Utah State Office of the Bureau of Land Management. The water rights spatial data were from the Utah Division of Water Rights (another division of the Utah Department of Natural Resources). With the exception of the “roads” theme, only geologic spatial data are briefly described in this report.

INTRODUCTION

Mapping and documenting Utah’s energy, mineral, and water resources are two of several critical tasks required to make decisions about land-use issues that affect the quality of life in Utah. Maps that show the location of these resources not only indicate their current distribution, but also

can indicate possible resource trends and suggest areas that have potential for additional discoveries. Conversely, these same maps can suggest areas that are not likely to host specific resources. However, to evaluate fully the geologic resource potential of any area, a comprehensive resource assessment must be completed. The creation of resource location maps in an atlas like the one summarized here is the first step in such an evaluation.

The Utah Geological Survey (UGS) has routinely collected, compiled, managed, and evaluated geologic data on the state's energy, mineral, and water resources as part of its mission for the past fifty years. The UGS maintains various databases of its own; however, the UGS also relies on other government agencies as sources of specific geologic data. In addition, the UGS gladly accepts data (including confidential data) donated by industry.

Another part of our mission is to make available the non-confidential data we manage to state and federal governmental agencies, the energy and mineral industries, and the public through released databases, maps, and reports. Historically, the data have been available only in paper data sheets and maps stored in files. However, for the past decade the UGS has created and maintained several digital databases containing much of this information. Some of the data are available in UGS publications as ASCII text files (see a current UGS publication list), and all published and some unpublished digital data are available for review at the UGS.

The UGS uses Geographic Information Systems (GIS) technology for many of its projects because it provides an efficient tool to view, analyze, interpret, and map spatial data. This atlas summary is a product of GIS technology. Geographic Information Systems technology also provides an effective means to make our data available to other users. The GIS format allows the individual users to combine, manipulate, and analyze the information for their own specific needs.

One purpose of this atlas summary is to show the distribution and amount of energy, mineral, and water rights data that are currently available through the UGS and other governmental agencies. An additional purpose of this atlas is to illustrate to industry, decision-makers, and other

interested parties how this information is helpful in identifying potential exploration trends and land-use issues. The UGS plans to release the spatial data from which this atlas summary was created on CD-ROM and through its web site in the near future, although much of the spatial data acquired from other governmental agencies are already available on their web sites (table 1). Although this summary atlas only focuses on the geologic resource locations mentioned, it still represents about 400 megabytes of geologic and non-geologic spatial data. The completeness of the databases varies. Some databases contain hundreds of data fields, whereas others contain only a record identification number and the location coordinates. Even within a database, the completeness of individual records is quite variable.

This atlas summary contains maps that show the distribution of energy, mineral, and water-rights locations in each of Utah's 30 x 60-minute quadrangles. The number and type of data points within each quadrangle, as well as a statewide total, are summarized in table 2. The maps show only the location of data points, although most of the geologic-based spatial data used to create the energy, mineral, and water rights location maps have as many as 254 data fields. The atlas also contains maps that show land ownership, roads, and other geographic information. All or part of fifty-six 30 x 60-minute quadrangle maps (1:100,000 scale)(figure 1) cover the state of Utah. A thin slice along Utah's western border with Nevada consists of quadrangles that are mostly in Nevada. For this atlas summary, those thin slices have been appended to the adjacent quadrangle in Utah immediately to the east. For example, the Utah part of the Jackpot quadrangle is appended to the Grouse Creek quadrangle. The maps in this atlas summary are organized in north to south rows starting with the Grouse Creek and part of the Jackpot 30 x 60-minute quadrangles in northwest Utah and ending with the Bluff quadrangle in the southeast. Any map may be quickly located by using figure 1 and the "Contents" pages in this report.

Each 30 x 60-minute quadrangle area has three maps: (1) energy and mineral locations, (2) water-rights locations, and (3) land ownership. The energy and mineral locations map includes

symbols depicting coal, geothermal, oil and gas, oil shale, tar sand, uranium, and mineral (metallic and non-metallic) locations. The water rights maps show the location of underground water rights and dams. The land ownership maps show the distribution of landowners as well as land recently exchanged between the State of Utah and the Federal government. A theme, or map layer, of the Utah Wilderness Coalition's 1996 inventory of proposed wilderness lands in Utah is included on the maps. Showing this map layer is an example of how GIS technology can help industry, decision-makers, and the public understand the distribution of geologic resources in relation to various land types, to aid in making informed land-use decisions.

DESCRIPTION OF SPATIAL DATA

This section briefly describes the sources of data and some of the important attributes such as the scale at which the data were compiled. As mentioned above, most of the databases are incomplete and continually being updated. It is beyond the scope of this publication to describe the completeness of the source databases.

Several GIS themes, or map layers, were used to create the maps in this atlas summary (table 1). Many themes are basic geographic spatial data such as roads, airports, and cities, whereas other themes are geologic. With the exception of roads, only geologic spatial data are briefly described in this report. A description of the "roads" spatial data is included in this report because it was the only non-geologic spatial data file that was modified from the original file. This spatial data file was filtered to create a theme that only contains certain road types. No additional data were added or revisions made to any of the geologic spatial data files after December 1, 1998.

Coal

Coal locations for this report are mainly from two UGS databases with some additional data provided by the Utah State Office of the Bureau of Land Management (UBLM) under a cooperative data-sharing agreement. The locations of all the coal data were determined from 7.5-minute quadrangle maps (1:24,000 scale). The first data source for this study was the Utah Mineral Occurrence System (UMOS) database. The UMOS database was used exclusively for locations of coal mines or prospects from the Alton, southern Book Cliffs, Emery, Henrys Fork, Henry Mountains, Kaiparowits Plateau, Kolob, San Juan, Sego, Tabby Mountain, and Vernal coalfields. Additional non-confidential coal data exist at the UGS for other coalfield areas, but were not included in this atlas because of time constraints in completing this initial compilation; however, the UGS will make the data available in future releases. The information in this database took more than a decade to compile, with cost-share funding provided to the UGS by various grants from the U.S. Geological Survey (USGS), U.S. Bureau of Mines (USBM), and the U.S. Bureau of Land Management (BLM). A more detailed description of UMOS is located in the “Minerals” section of this report.

A second source of coal data for this atlas was the National Coal Resources Data System (NCRDS), which was used for the locations of coal drill holes and measured section data in the coalfields listed above. An equal number of NCRDS data points from other coalfields were not included because of time constraints. Because some of the coal data in the NCRDS database are confidential, only the locations of the points are provided in this report. The UGS collected the data for the NCRDS database over many years with cost-share funding from various USGS grants.

Additional location data for confidential coal exploration drill holes in the Kaiparowits Plateau coalfield are from the UBLM under a cooperative data-sharing agreement.

Geothermal

The geothermal locations shown in this atlas are from the UGS and the USGS databases compiled by Blackett (1994), and the UBLM oil and gas spatial database. This data set contains information on thermal wells and springs that have temperatures of 20°C (68°F) or greater. Both wells and springs are plotted on maps in the atlas. The geothermal data from the UBLM came from their oil and gas spatial data file, which is available on the World Wide Web (table 1). The UBLM data pertain only to drill holes. Some of the drill holes are productive geothermal wells in known geothermal resource areas, but other drill holes are only non-productive exploratory wells. The UBLM drill holes are shown in the atlas as “other drill holes.” No attempt was made to discriminate between productive and non-productive wells. The accuracy of the geothermal locations derived from both databases was checked to make sure the locations were plotted in the correct township and range.

Minerals

Nearly all of the data on metallic mineral deposits, industrial rock and mineral deposits, and uranium and vanadium mineral deposits are from the UMOS database. The database contains information on approximately 8,900 metallic and non-metallic mines, prospects, and occurrences in Utah. The database includes about 5,300 metallic and industrial rock and mineral records and more than 1,000 uranium records. Nearly 2,000 of the UMOS records are for sand and gravel deposits.

The database was developed as part of a ten-year cooperative program between the BLM, the USGS, and the UGS. The database was initially part of the national Computerized Resource Information Bank (CRIB) and later renamed the Mineral Resource Data System (MRDS) by the USGS. The UGS version of the database was renamed UMOS because it differs slightly from MRDS.

The data in UMGOS are available at the UGS in both hard copy and computer format. The hard copy includes maps and text in UGS files. These files are arranged by county, and within the county by USGS quadrangle maps; usually at 1:24,000 scale but occasionally at 1:62,500 scale. The location of each record is plotted on the quadrangle and the record itself is either a standard eight-page data sheet (early format) or a standard six-page data sheet (later format). Both formats have identical data fields. In addition to the hard-copy data sheets for the individual mines and prospects, these files contain mine maps, geologic reports, sample and assay sheets, other information that did not fit into the established database format, and information that became available after the record was completed.

In collecting information for the database during the ten-year compilation period, UGS personnel researched the published literature on each 7.5-minute quadrangle in Utah and examined the quadrangle maps for mine or prospect symbols. This compilation was followed by on-site examinations of more than 90 percent of the mines, prospects, and other workings in the database. Most of the major mines and prospects in the state are included in the database. A number of smaller mines and prospects may not have been included particularly if they are not shown on the topographic maps, not reached by an obvious road or track, not easily seen from roads, or are not in a well-defined mining district or area.

About 85 percent (more than 95 percent for records on metallic minerals) of the occurrences have some type of workings, although they are not fully described in the database. The size and number of the workings included in an individual record varies greatly. Generally, individual records encompass a single operation, claim or claim group, or named mine. Some individual records represent operations that may have up to 10 or more pits, adits or shafts, or multiple groups of workings. Other single records represent giant workings such as the Bingham pit. Still other individual records represent operations that consist of small prospect pits and adits with little or no production or sometimes no obvious mineralization. Some records, particularly for industrial

minerals, do not always have associated workings. These records are for particular geologic formations or zones that contain potentially extractable commodities, and are assigned an arbitrary central outcrop point location. Examples of records that fall into this category include minable phosphate beds, surface and subsurface brines, gypsum sand dunes, gypsum horizons, and high-calcium limestone beds.

The maps in this atlas show the location and type (metallic, non-metallic, or uranium-vanadium) of the mineral occurrence records. In the database, all records have a unique record number and most also have a specific mine or prospect name. All records have Universal Transverse Mercator (UTM) location coordinates and many have geodetic (latitude and longitude) as well as cadastral (section, township, and range) locations. UTM coordinates are usually accurate to the scale of the topographic map used; within 200 meters (0.12 mi) for nearly all records but most record locations are accurate to within 50 meters (0.03 mi). The commodity type (metallic, non-metallic, or both) is identified in all records. For most records, one or more major commodities (copper, lead, sand/gravel, limestone, and others) are identified but for some prospects (fewer than 7 percent), the commodity is "unknown." Some exploration prospects have been developed on quartz veins or iron-stained zones where no valuable commodity is identified, and would be classified as "unknown." In other cases, the commodity may be present but was unrecognized by the reporter; precious metal veins would be a good example since the presence of gold is commonly only detected by assaying. The records are generally accurate for the major commodities listed; however, identification and listing of the commodities does not imply that the prospect or mine could be profitably developed. It only indicates the presence of a valuable commodity.

Some information on metallic and non-metallic deposits is not included in the database. Examples include drill holes and intercepts, unannounced or "unadvertised" new discoveries, and geochemical or geophysical anomalies. This type of information is commonly of much greater importance and significance than information in the database on minor occurrences.

Oil Shale

All of the oil shale locations displayed in the atlas are from database files at the UGS. Some of the oil shale locations are from the UMOS database. These records are uniquely symbolized on the maps and identified as “UMOS” in the explanation. Refer to the “Minerals” section for a description of the UMOS database. The oil shale locations within UMOS were checked to make sure that they were plotted in the correct township and range. Other oil shale location data come from paper files at the UGS and published reports by the USGS, the U.S. Department of Energy (DOE), and the USBM. Nearly all of the data are drill holes locations. Their UTM coordinates were mathematically determined from their cadastral locations within a 640-acre section. Thus, the UTM coordinates determined for the oil shale locations that are in irregular sections (more or fewer than 640 acres) are accurate to within 160 acres.

Oil and Gas

All of the oil and gas locations used in this atlas summary come from the UBLM oil and gas spatial data file, which is available and regularly updated on the World Wide Web (table 1). The UBLM compiled the data at 1:24,000 scale. The UBLM oil and gas spatial data file also includes geothermal locations. Thus, all of the geothermal wells were extracted from this file to prevent duplications with the geothermal data previously described in the “Geothermal” section of this report.

The oil and gas location symbols on each map show the well status as contained in the database. Status categories include producing wells, shut-in wells, abandoned wells, injection wells, disposal wells, and other well types. Only the record locations were checked to make sure they were in the correct township and range; none of the other information contained within the database was systematically checked for accuracy and completeness.

Tar Sand

All of the tar sand locations displayed in the atlas are from database files at the UGS. Some of the tar sand locations were extracted from the UMOS database. These records are assigned a distinct symbol on the maps and identified as “UMOS” in the map explanations. Refer to the “Minerals” section for a description of the UMOS database. The tar sand locations within UMOS were checked to make sure that they were plotted in the correct township and range. Other tar sand location data come from paper files at the UGS and published reports by the USGS, DOE, and USBM. Nearly all of the data are represented by drill hole locations. Their UTM coordinates were mathematically determined from their cadastral locations within a 640-acre section. Thus, the UTM coordinates determined for the tar sand locations that are in irregular sections (more or fewer than 640 acres) are accurate to within 160 acres.

Water Rights

All of the water rights locations plotted on the maps in this report are from the “Dams” and “Point of Diversion” spatial data files maintained by the Utah Division of Water Rights (WR). Both files are available on the WR web site (table 1). The “Dams” spatial data file is comprehensive and thoroughly attributed. All of the dams in this spatial data file are included in the atlas. The “Point of Diversion” spatial data file is also comprehensive and thoroughly attributed. Only approved and perfected underground water rights in this spatial data file are included in the atlas. This means that an underground symbol on the map represents only the right to develop the underground water at that location. It does not necessarily mean that water wells may be present, but in many instances, they are. In either case, access rights to that location would be necessary to install or maintain water-well equipment to produce the underground water.

Roads

The “roads” theme is the only non-geologic theme described in this report because it was modified or revised from the original Automated Geographic Reference Center data file. The spatial data are from the USGS 1:100,000-scale Digital Line Graph (DLG) version of each 30 x 60-minute quadrangle, and the file is attributed with codes to denote road types that range from primary (or paved) routes to pack trails. For this atlas summary, all records coded as four-wheel-drive routes or jeep or pack trails were removed. Thus, only paved, improved gravel, and dirt/gravel roads are shown on the accompanying maps. In addition, many of the city streets were removed from the larger cities on the Ogden, Provo, and Salt Lake City quadrangles to reduce file size. Many of the quadrangles were randomly spot checked to look for inconsistencies between the road types coded in the data file and the road types identified on the USGS paper 30 x 60-minute quadrangle maps.

ACKNOWLEDGMENTS

Any project of this magnitude is not completed without the help of many others. I thank Gen Green, Utah School and Institutional Trust Lands Administration, for providing the land ownership and land-exchange spatial data; Matt Peters, Automated Geographic Reference Center, for providing the wilderness and other non-geologic spatial data from the State Geographic Information Database or SGID; and Boyd Clayton, Utah Division of Water Rights, for providing the water rights spatial data and clarifying information in the metadata files. I also thank the project’s team members for all of their hard work, suggestions, and timeliness. I especially thank John Hanson and Kelli Bacon, both of UGS, for all of their help using ArcView. They provided timesaving suggestions and tools that shortened my learning curve and allowed the completion of this project on time. This project would also have been impossible without the efforts of dozens of current and former UGS, USGS, BLM, and other federal and state workers who created, contributed to, and maintained the databases

used in this atlas.

REFERENCE

Blackett, R.E., 1994, Data release of low-temperature geothermal water in Utah: Utah Geological Survey Open-File Report 311DF, 1 disk in Quattro Pro, August 1994.

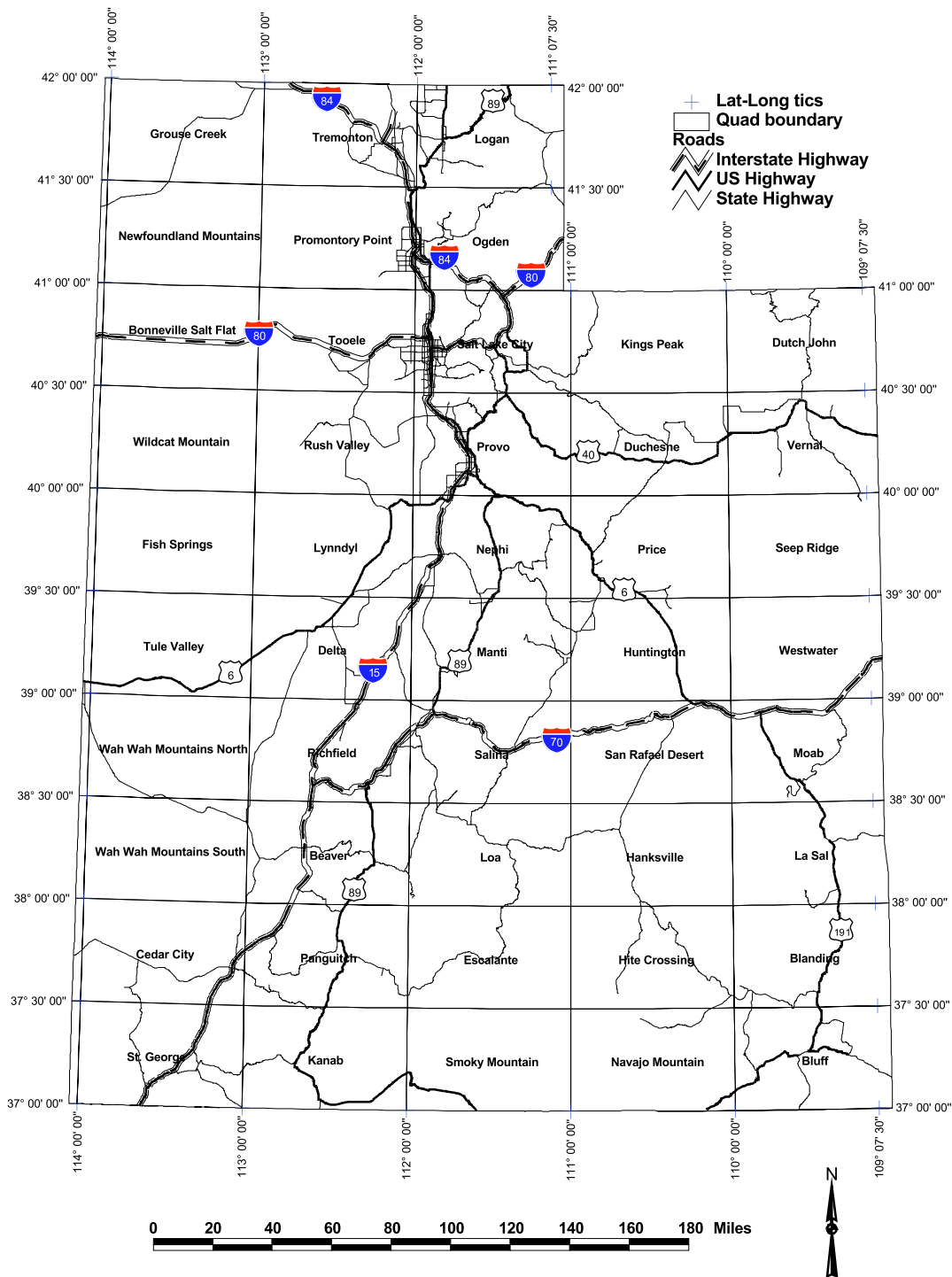


Figure 1. Index of 30 x 60-minute quadrangle maps in Utah.

Table 1. Spatial data themes used to construct the atlas.

Theme	File	Scale	Agency	Location
Airports	qu100.trair	1:100,000	AGRC	http://www.its.state.ut.us/agrc/
Communications	st500.utmwv	1:500,000	AGRC	http://www.its.state.ut.us/agrc/
Power Plants	powerpln	1:500,000	AGRC	http://www.its.state.ut.us/agrc/
Quadrangle Index	qu100.index	1:100,000	AGRC	http://www.its.state.ut.us/agrc/
Roads	qu100.trrds	1:100,000	AGRC	http://www.its.state.ut.us/agrc/
UWC 1996 wilderness inventory	st100.aopw1	1:100,000	AGRC	http://www.its.state.ut.us/agrc/
Geothermal (derived from og_wells file)	gthrmwel	1:24,000	BLM	ftp://ftp.ut.blm.gov/pub/gis/minerals
Oil & Gas Wells	og_wells	1:24,000	BLM	ftp://ftp.ut.blm.gov/pub/gis/minerals
Land Exchange to USA	exch_lose	1:500,000	SITLA	ftp://lands1.state.ut.us/pub/exch3830
Land Exchange to Utah	exch_recv	1:500,000	SITLA	ftp://lands1.state.ut.us/pub/exch3830
Land Ownership	st500.aolsa	1:500,000	SITLA	ftp://lands1.state.ut.us/pub/
Lat-Long Tic	lltics	1:100,000	UGS	under construction
Coal (ncrds)	coan	1:24,000	UGS	under construction
Coal (umos)	coau	1:24,000	UGS	under construction
Geothermal	utgeothc	1:100,000	UGS	under construction
Minerals	umos_min	1:24,000	UGS	under construction
Oil Shale	utoshale	1:24,000	UGS	under construction
Oil Shale (umos)	umososhl	1:24,000	UGS	under construction
Tar Sand	tarsand	1:24,000	UGS	under construction
Tar Sand (umos)	umostars	1:24,000	UGS	under construction
Uranium (umos)	uranium	1:24,000	UGS	under construction
Utah Cities/Towns	places.txt	unknown	USCB	http://ftp.census.gov/geo/www/gazetteer/places.html
Dams	wrdams	1:24,000	WR	http://nrwrt1.nr.state.ut.us/arcinfo/basemaps.html
Water Rights (Point of Diversion)	wrpod	1:24,000	WR	http://nrwrt1.nr.state.ut.us/arcinfo/basemaps.html

AGRC = Utah Automated Geographic Reference Center

BLM = U.S. Bureau of Land Management

SITLA = School and Institutional Trust Lands Administration

UGS = Utah Geological Survey (Dept. Natural Resources)

USCB = U.S. Census Bureau

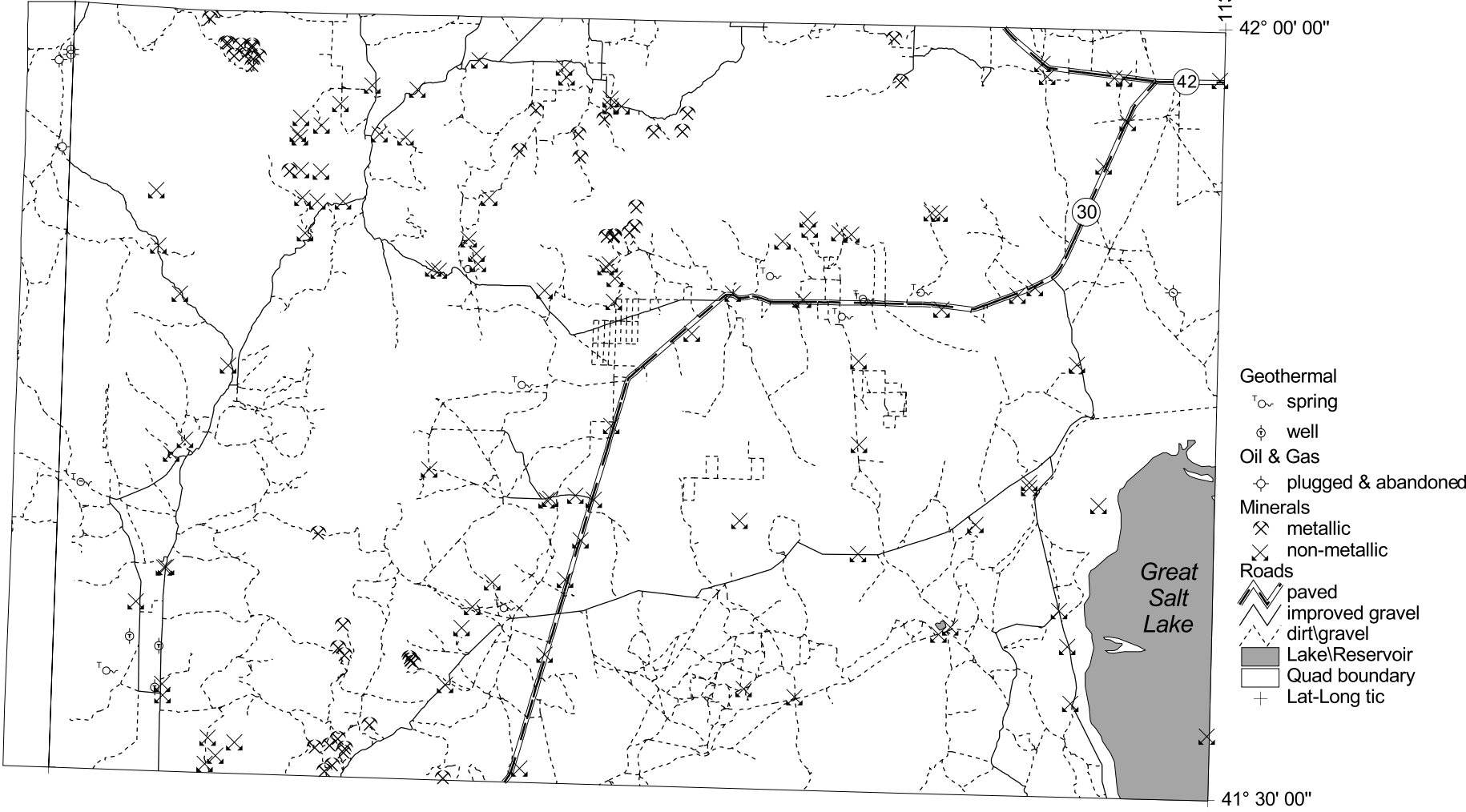
UWC = Utah Wilderness Coalition

WR = Utah Water Rights (Dept. Natural Resources)

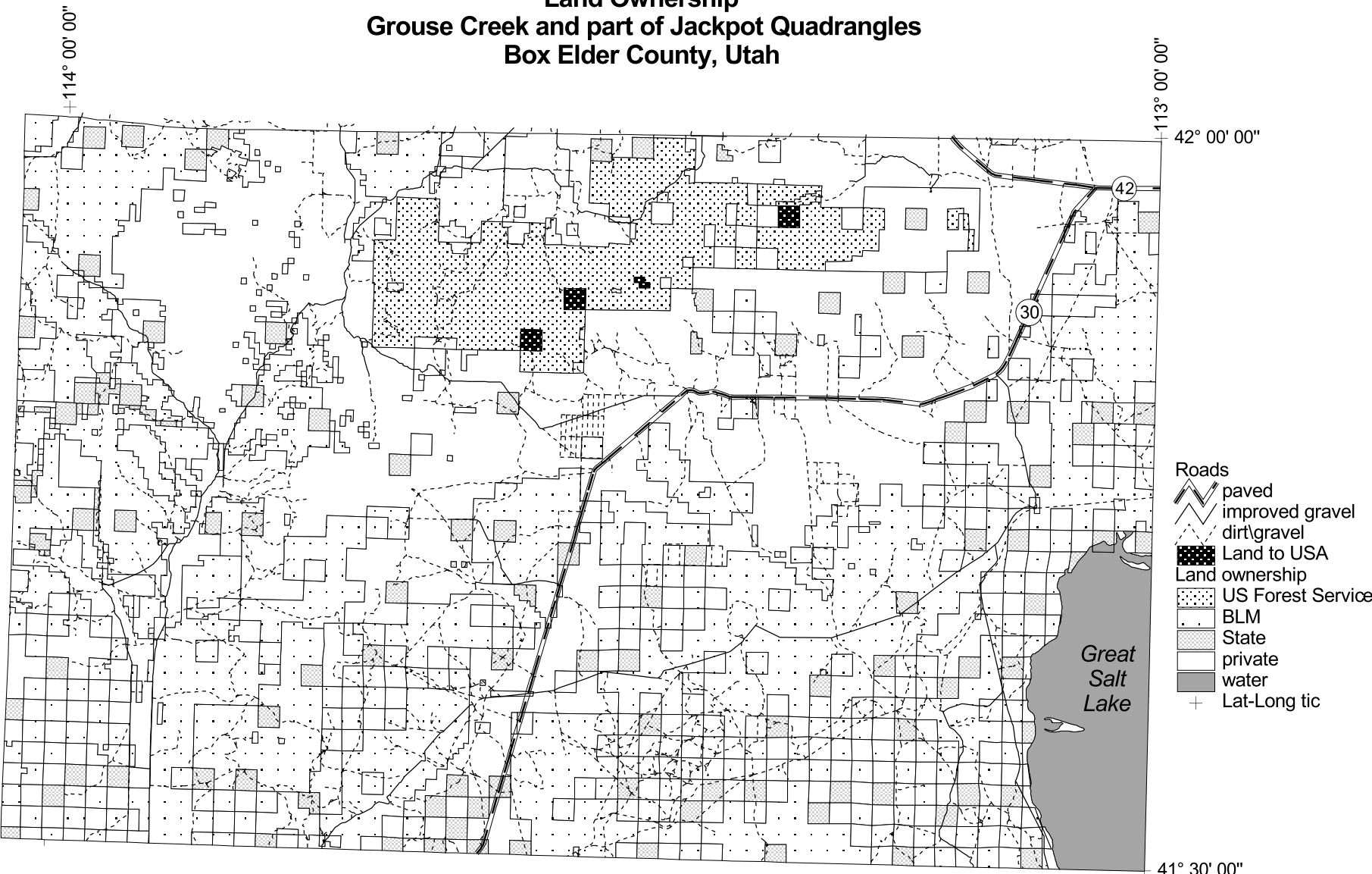
Table 2. Summary of data points in each 30 x 60-minute quadrangle with statewide total.

Number	Quadrangle Name	Water Rights (underground)	Dams	Geothermal	Uranium	Tar Sand	Oil Shale	Coal	Oil & Gas	Minerals	Airport	Power Plant	Communications
1	Grouse Creek	539	9	13	0	0	0	0	5	144	0	0	0
2	Newfoundland Mountains	55	0	4	0	0	0	0	2	155	0	0	0
3	Bonneville Salt Flat	75	0	71	0	0	0	0	2	103	1	0	3
4	Wildcat Mountain	65	1	2	0	0	0	0	0	259	0	0	0
5	Fish Springs	164	4	20	5	0	0	0	1	206	0	0	0
6	Tule Valley	117	2	20	0	0	0	0	8	69	0	0	0
7	Wah Wah Mountains N	75	5	2	2	0	0	0	19	55	1	0	1
8	Wah Wah Mountains S	1382	9	40	4	0	0	0	1	189	1	0	0
9	Cedar City	5617	26	28	8	0	0	6	7	204	1	0	2
10	St. George	2097	29	32	12	2	0	0	239	237	2	0	2
11	Tremonton	2382	15	73	0	0	0	0	33	124	2	1	0
12	Promontory Point	3600	9	60	0	0	0	0	42	111	1	0	1
13	Tooele	4735	28	80	0	0	0	0	17	234	4	3	3
14	Rush Valley	1095	6	5	0	0	0	0	7	344	1	0	0
15	Lynndyl	431	12	16	0	0	0	0	4	366	0	2	0
16	Delta	2916	11	60	0	0	0	0	13	105	1	0	0
17	Richfield	2164	18	73	12	0	0	0	11	160	2	1	2
18	Beaver	1626	26	43	36	0	0	0	6	232	2	0	0
19	Panquitch	1992	16	24	0	0	0	43	16	123	3	0	0
20	Kanab	758	19	6	5	0	0	457	11	35	1	0	0
21	Logan	4396	32	30	0	0	0	0	40	106	1	0	2
22	Ogden	3531	73	16	0	0	0	0	121	110	2	1	3
23	Salt Lake City	15210	102	56	0	0	0	17	166	455	6	1	5
24	Provo	10905	58	80	0	0	8	0	36	230	4	1	4
25	Nephi	2333	39	18	0	4	3	5	88	117	2	4	0
26	Manti	2468	58	9	0	0	0	41	163	125	2	8	2
27	Salina	528	32	5	9	0	0	1011	65	61	0	3	0
28	Loa	466	27	5	18	0	0	179	23	60	1	0	1
29	Escalante	251	17	0	35	13	0	124	95	41	1	1	1
30	Smoky Mountain	103	2	1	4	0	0	630	13	23	0	0	0
31	Kings Peak	293	61	0	0	2	1	2	53	21	0	0	0
32	Duchesne	2189	45	1	0	14	162	5	1583	66	3	0	1
33	Price	344	10	3	0	32	61	0	388	23	1	9	2
34	Huntington	67	25	5	16	0	0	200	154	37	1	0	1
35	San Rafael Desert	42	4	0	158	18	0	0	132	31	1	0	0
36	Hanksville	111	1	5	26	38	0	870	98	14	1	0	0
37	Hite Crossing	42	3	13	120	1	0	440	31	27	2	0	0
38	Navajo Mountain	15	0	5	10	1	0	0	25	3	1	0	0
39	Dutch John	515	35	1	4	12	0	20	106	67	2	0	0
40	Vernal	2033	35	26	7	49	258	18	2197	40	1	0	2
41	Seep Ridge	77	2	28	3	130	383	0	1026	1	0	1	0
42	Westwater	10	1	0	4	39	5	412	1132	4	0	0	0
43	Moab	1314	11	8	138	0	0	0	377	71	2	0	2
44	La Sal	470	12		205	0	0	0	198	34	1	0	0
45	Blanding	988	20	4	156	0	0	3	347	16	2	0	0
46	Bluff	276	0	21	12	1	0	0	2314	21	2	0	0
Utah Total		80862	950	1012	1009	356	881	4477	11415	5259	62	36	40

Energy and Mineral Locations Grouse Creek and part of Jackpot Quadrangles Box Elder County, Utah

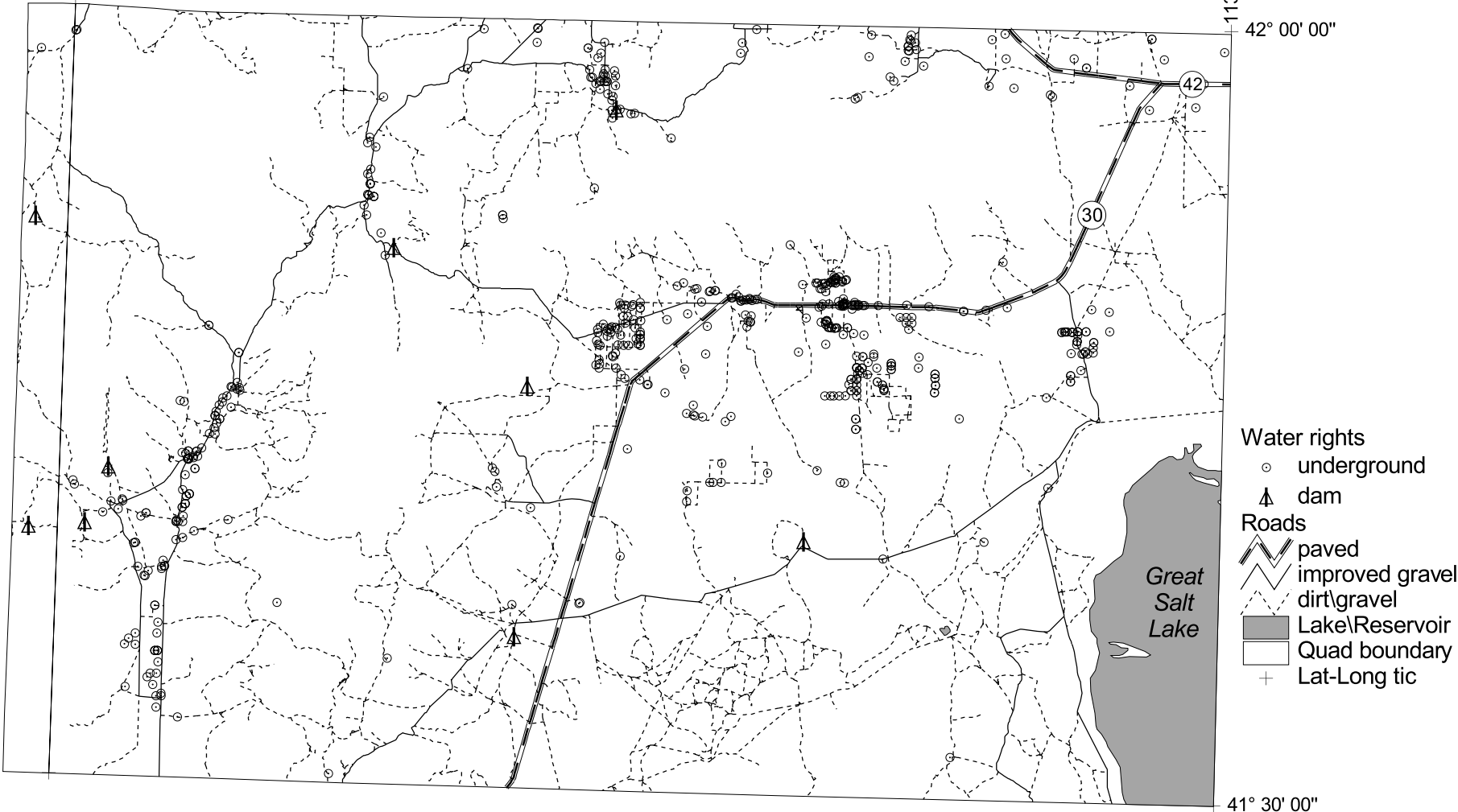


Land Ownership Grouse Creek and part of Jackpot Quadrangles Box Elder County, Utah

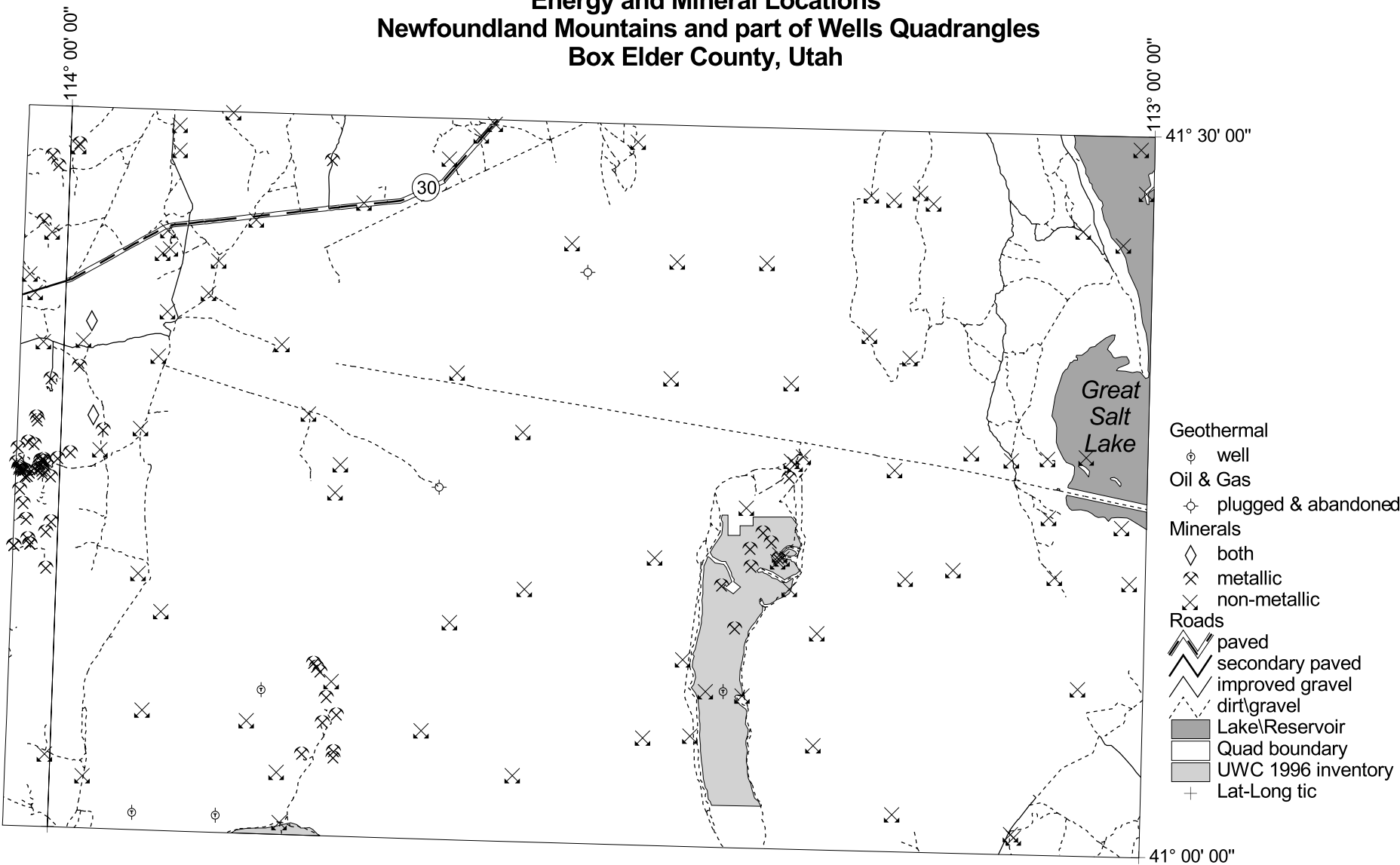


- Roads**
- paved
 - improved gravel
 - dirt/gravel
- Land ownership**
- Land to USA
 - US Forest Service
 - BLM
 - State
 - private
 - water
 - Lat-Long tic

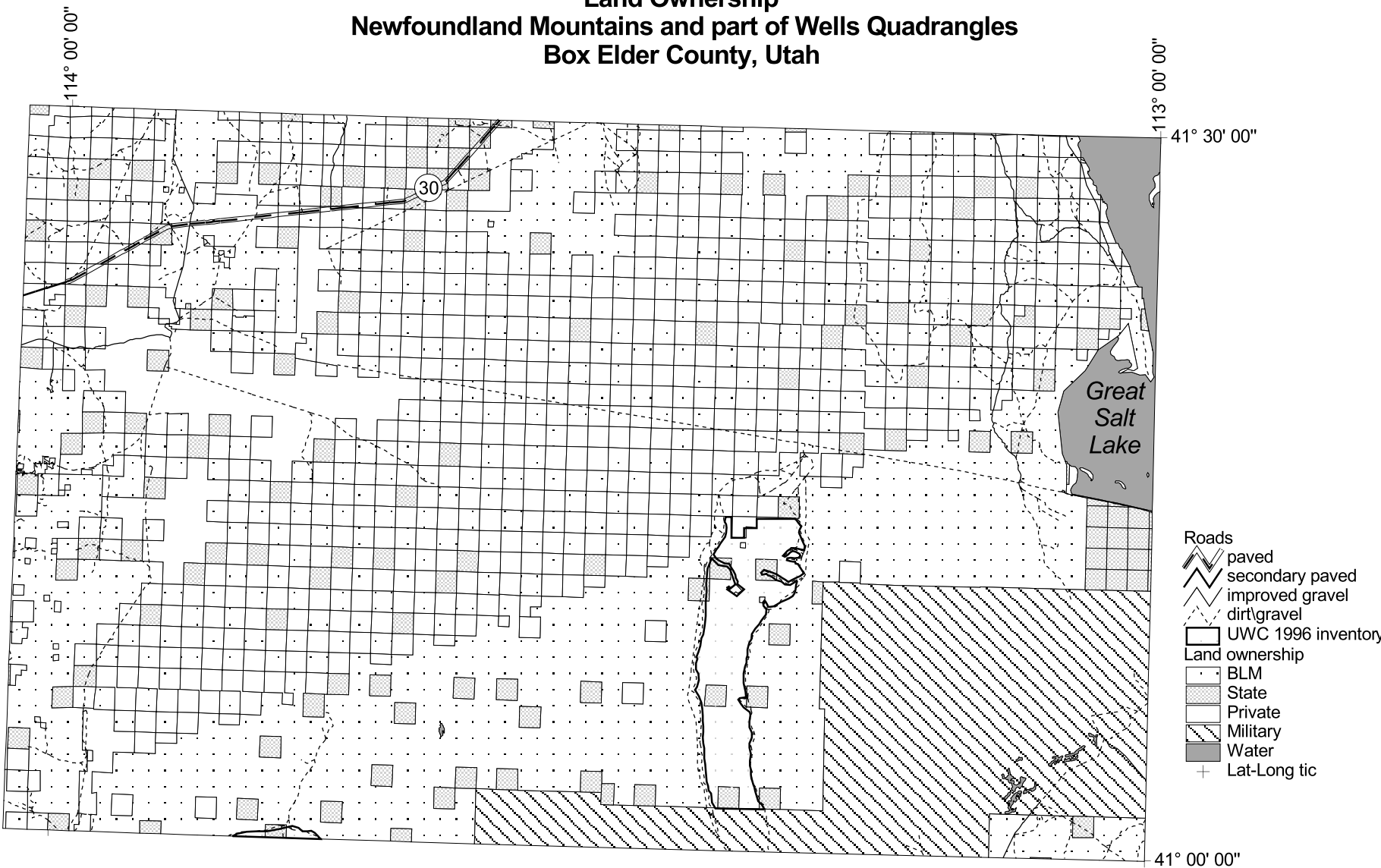
Water Rights Locations Grouse Creek and part of Jackpot Quadrangles Box Elder County, Utah



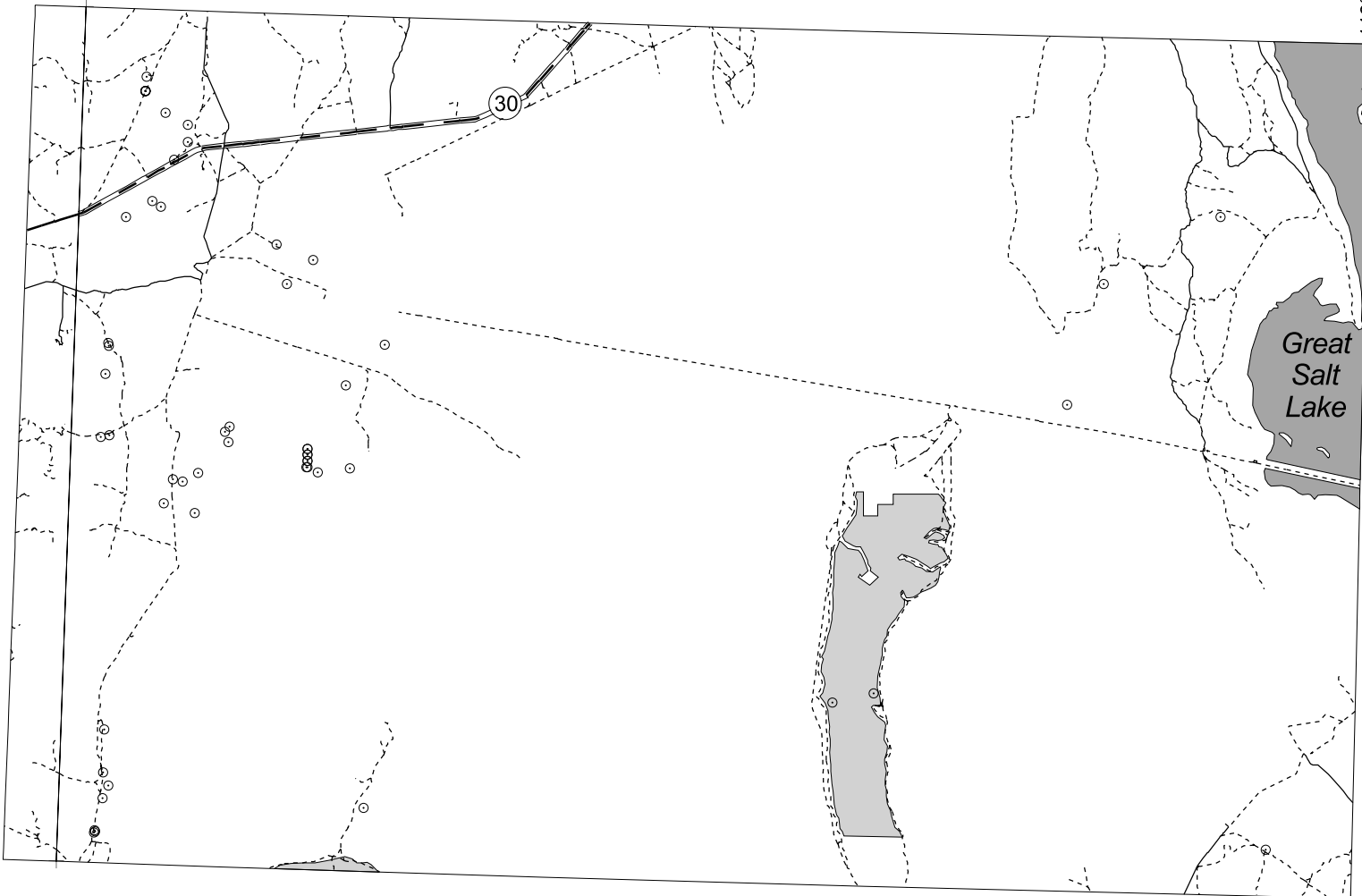
Energy and Mineral Locations Newfoundland Mountains and part of Wells Quadrangles Box Elder County, Utah



Land Ownership Newfoundland Mountains and part of Wells Quadrangles Box Elder County, Utah



Water Rights Locations Newfoundland Mountains and part of Wells Quadrangles Box Elder County, Utah



113° 00' 00"
41° 30' 00"

Water rights

- underground

Roads

- ▤ paved
- ▤ secondary paved
- ▤ improved gravel
- ▤ dirt/gravel

■ Lake/Reservoir

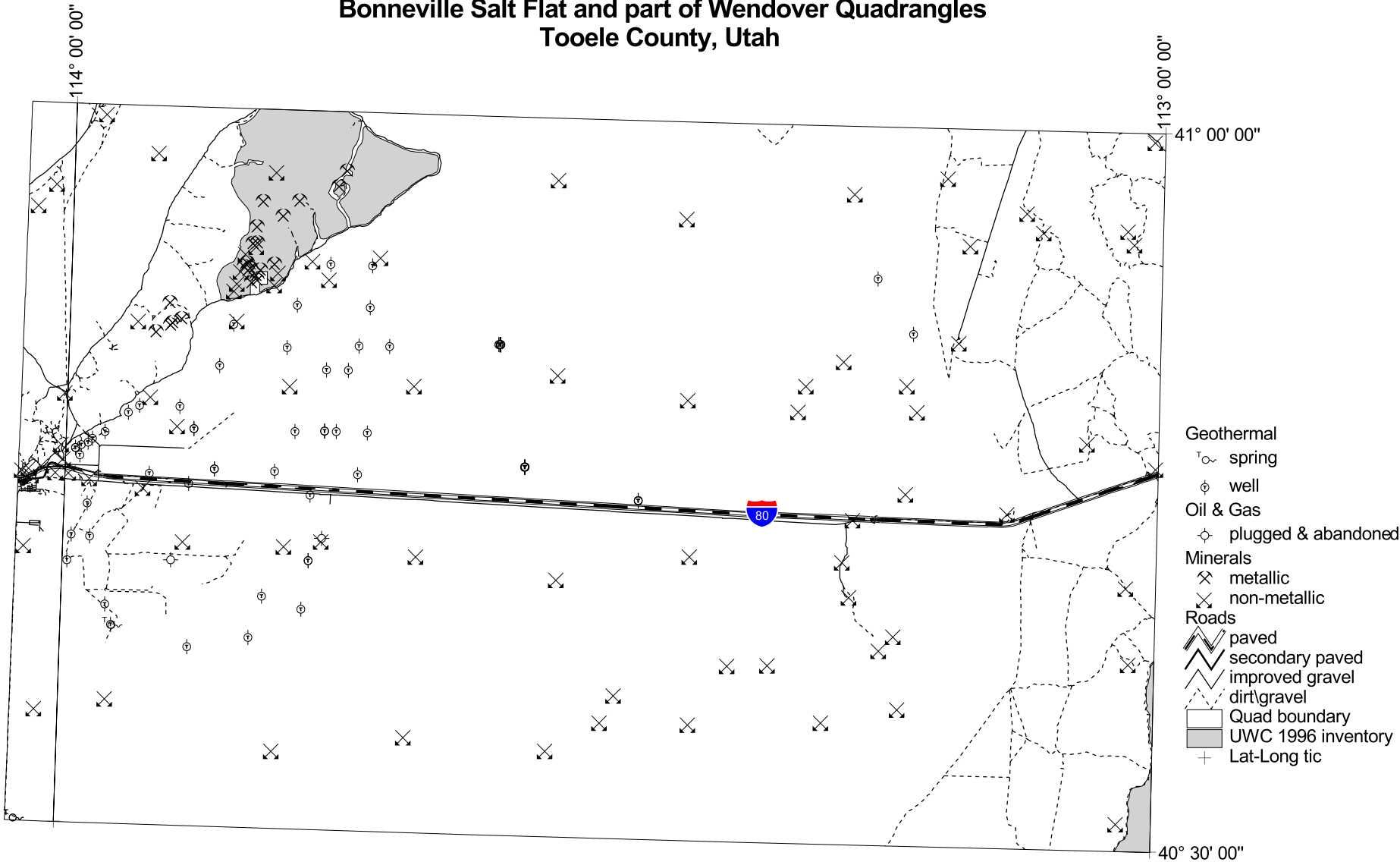
□ Quad boundary

■ UWC 1996 inventory

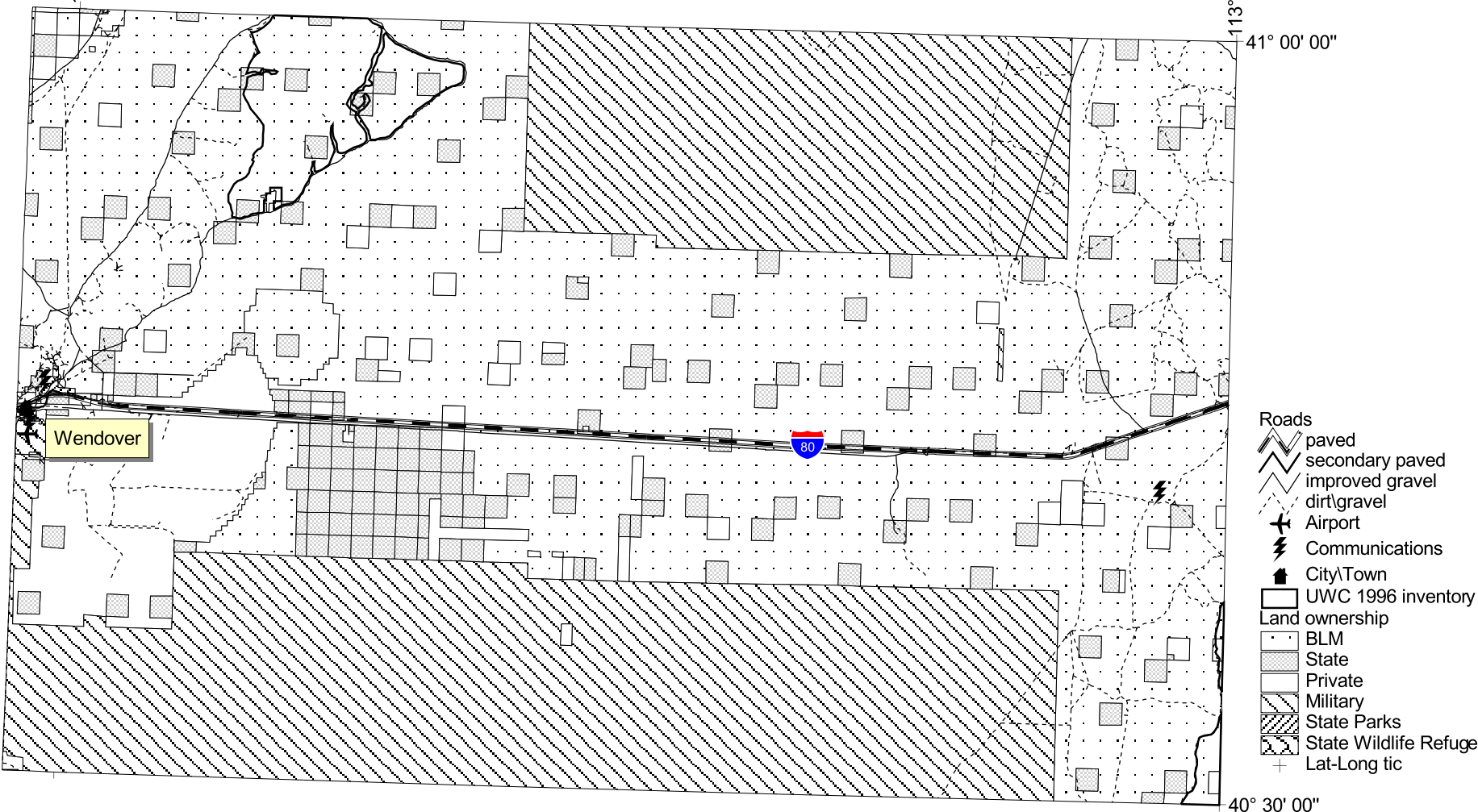
+ Lat-Long tic

41° 00' 00"

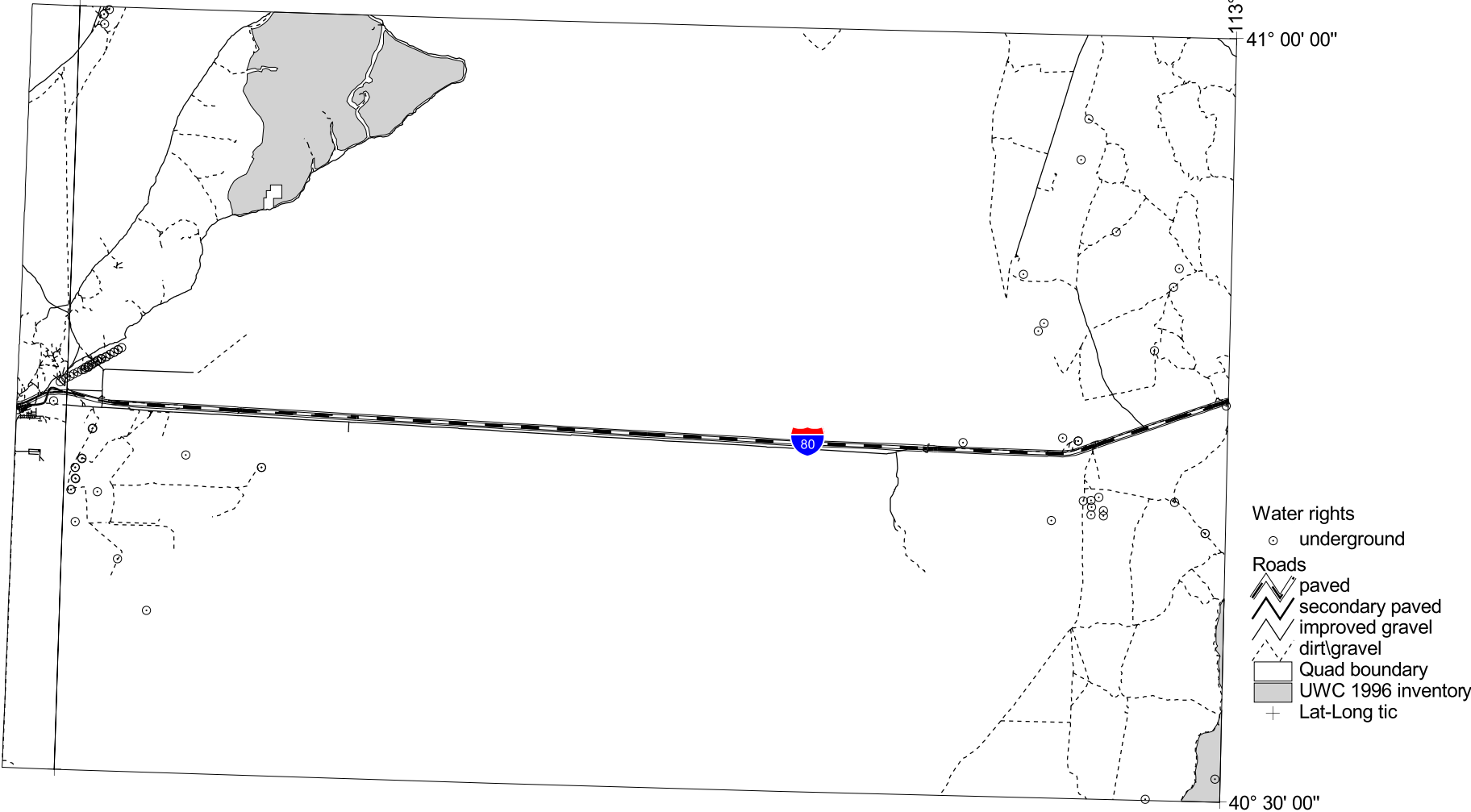
Energy and Mineral Locations Bonneville Salt Flat and part of Wendover Quadrangles Tooele County, Utah



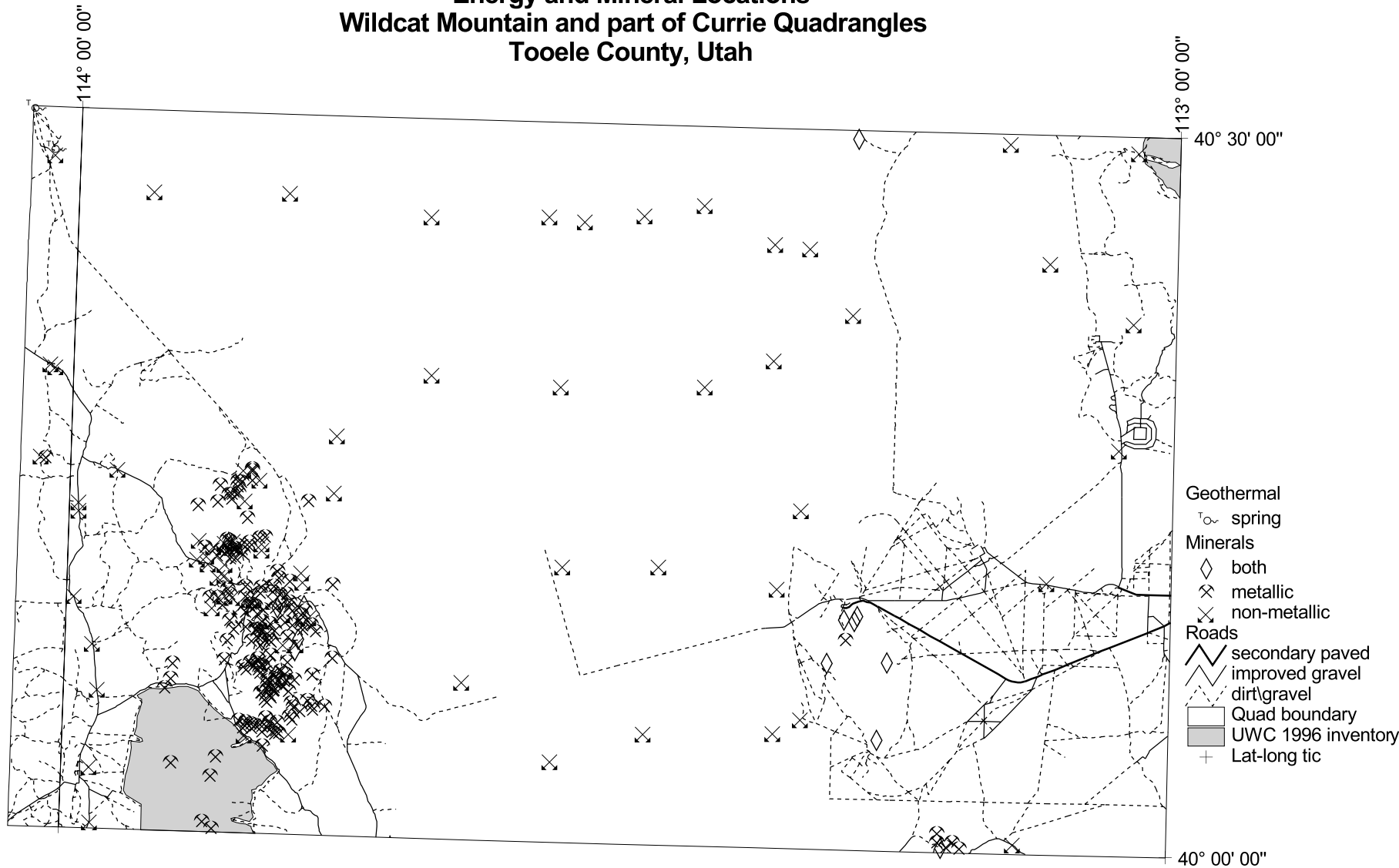
Land Ownership Bonneville Salt Flat and part of Wendover Quadrangles Tooele County, Utah



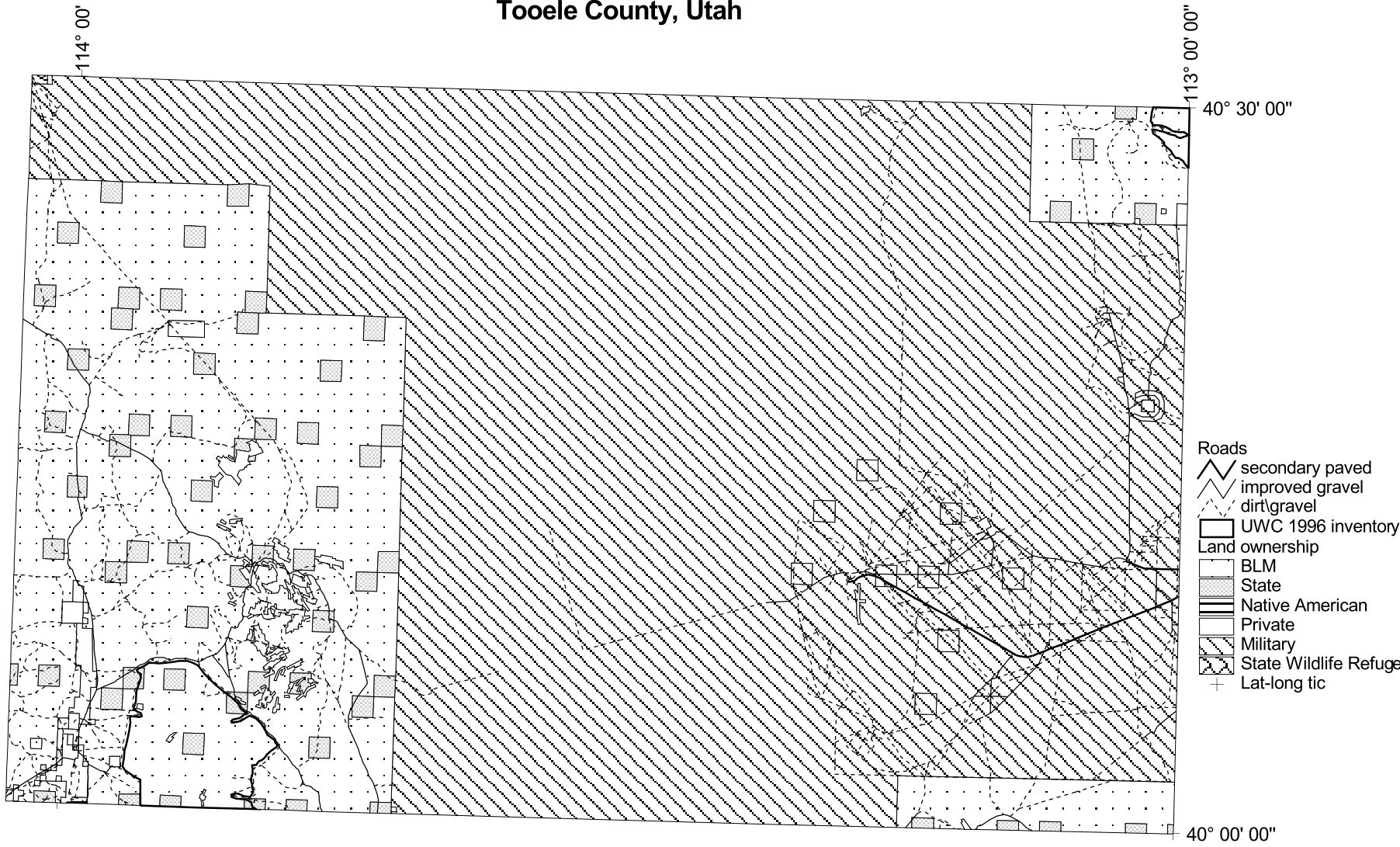
Water Rights Locations Bonneville Salt Flat and part of Wendover Quadrangles Tooele County, Utah



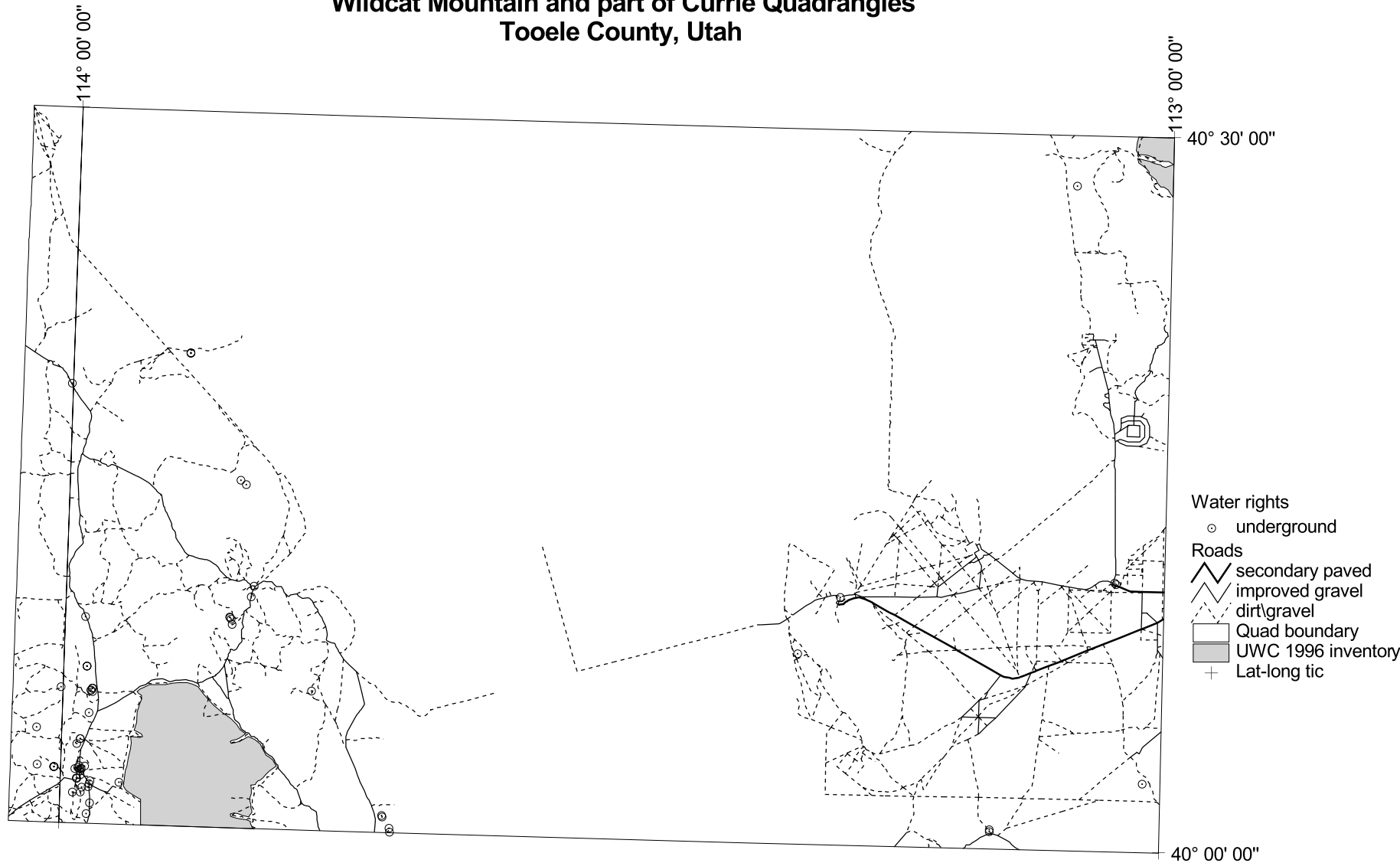
Energy and Mineral Locations Wildcat Mountain and part of Currie Quadrangles Tooele County, Utah



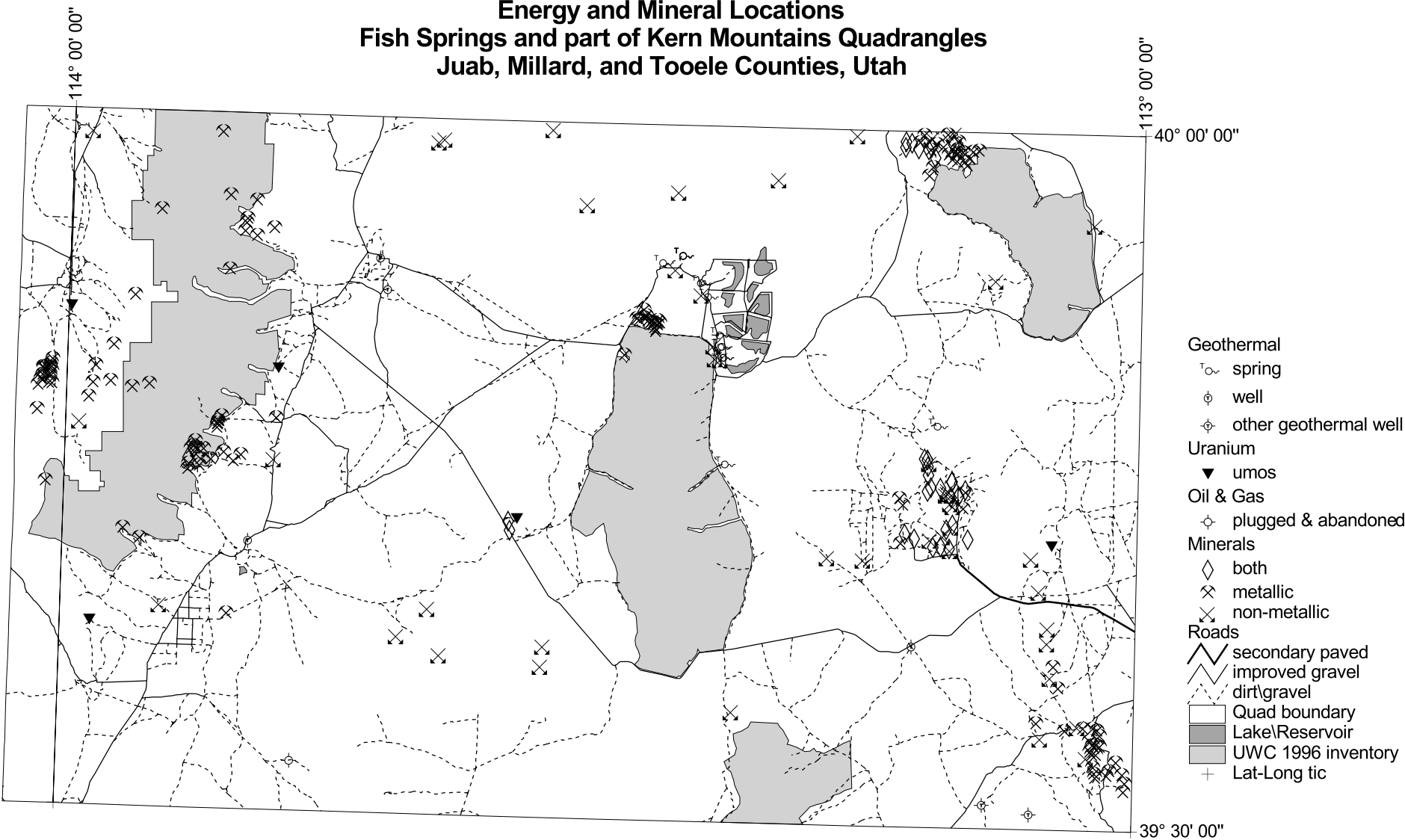
Land Ownership Wildcat Mountain and part of Currie Quadrangles Tooele County, Utah



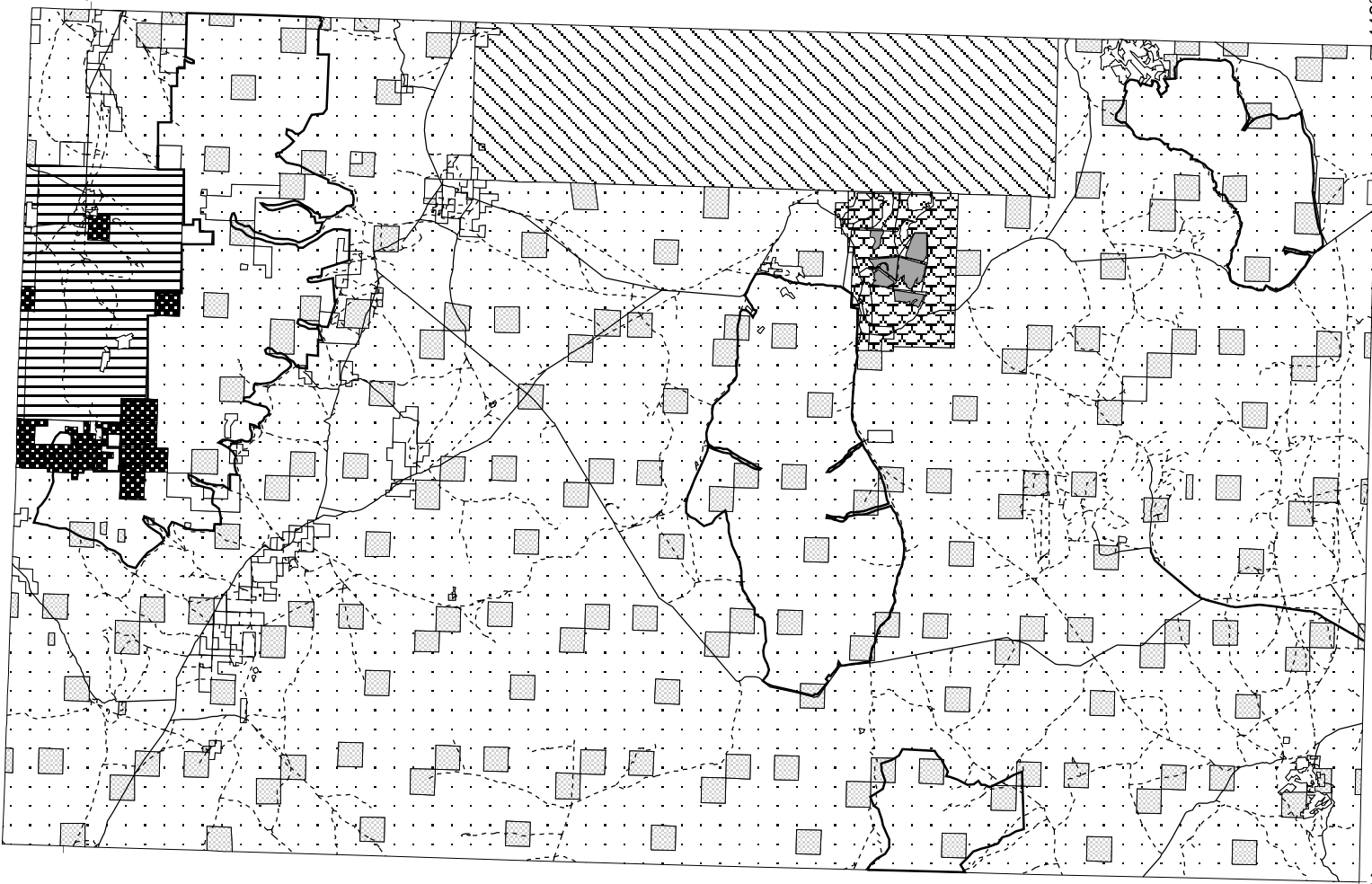
Water Rights Locations Wildcat Mountain and part of Currie Quadrangles Tooele County, Utah



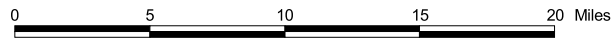
Energy and Mineral Locations Fish Springs and part of Kern Mountains Quadrangles Juab, Millard, and Tooele Counties, Utah



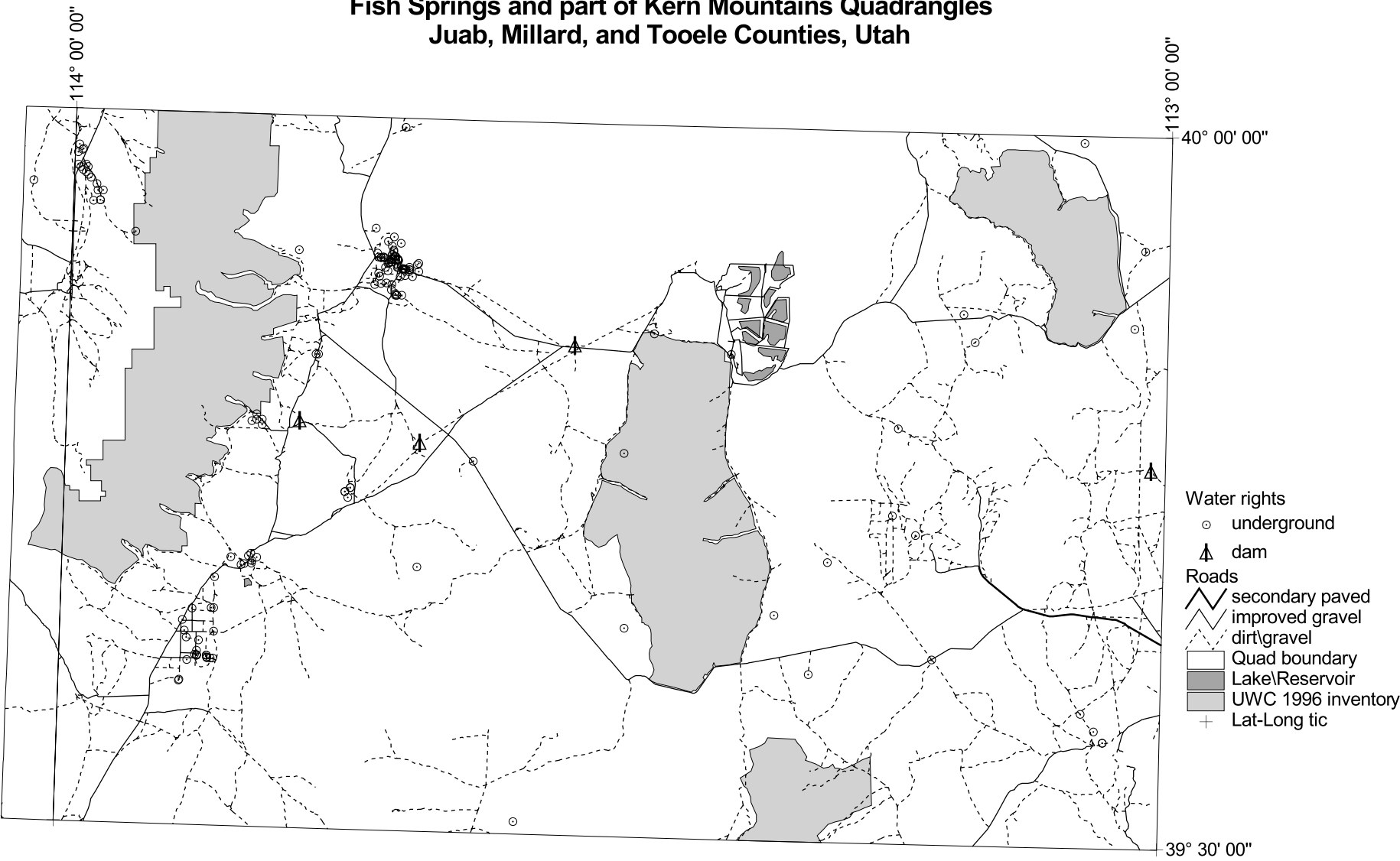
Land Ownership Fish Springs and part of Kern Mountains Quadrangles Juab, Millard, and Tooele Counties, Utah



- Roads**
- secondary paved
 - improved gravel
 - dirt/gravel
- Land ownership**
- UWC 1996 inventory
 - Land to USA
 - BLM
 - State
 - Native American
 - Private
 - Military
 - Natl Wildlife Refuge
 - Water
 - Intermittent water
 - Lat-Long tic



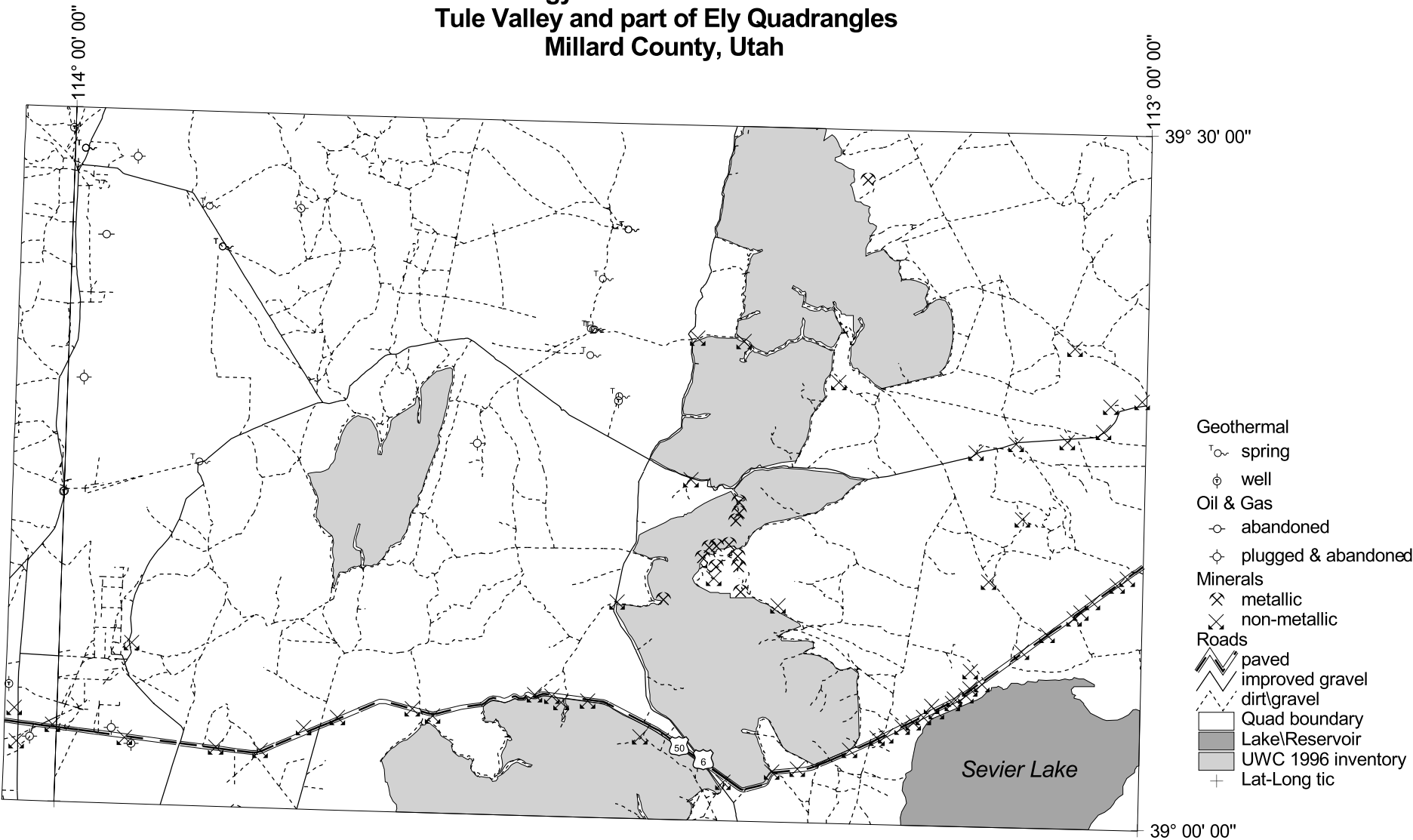
Water Rights Locations Fish Springs and part of Kern Mountains Quadrangles Juab, Millard, and Tooele Counties, Utah



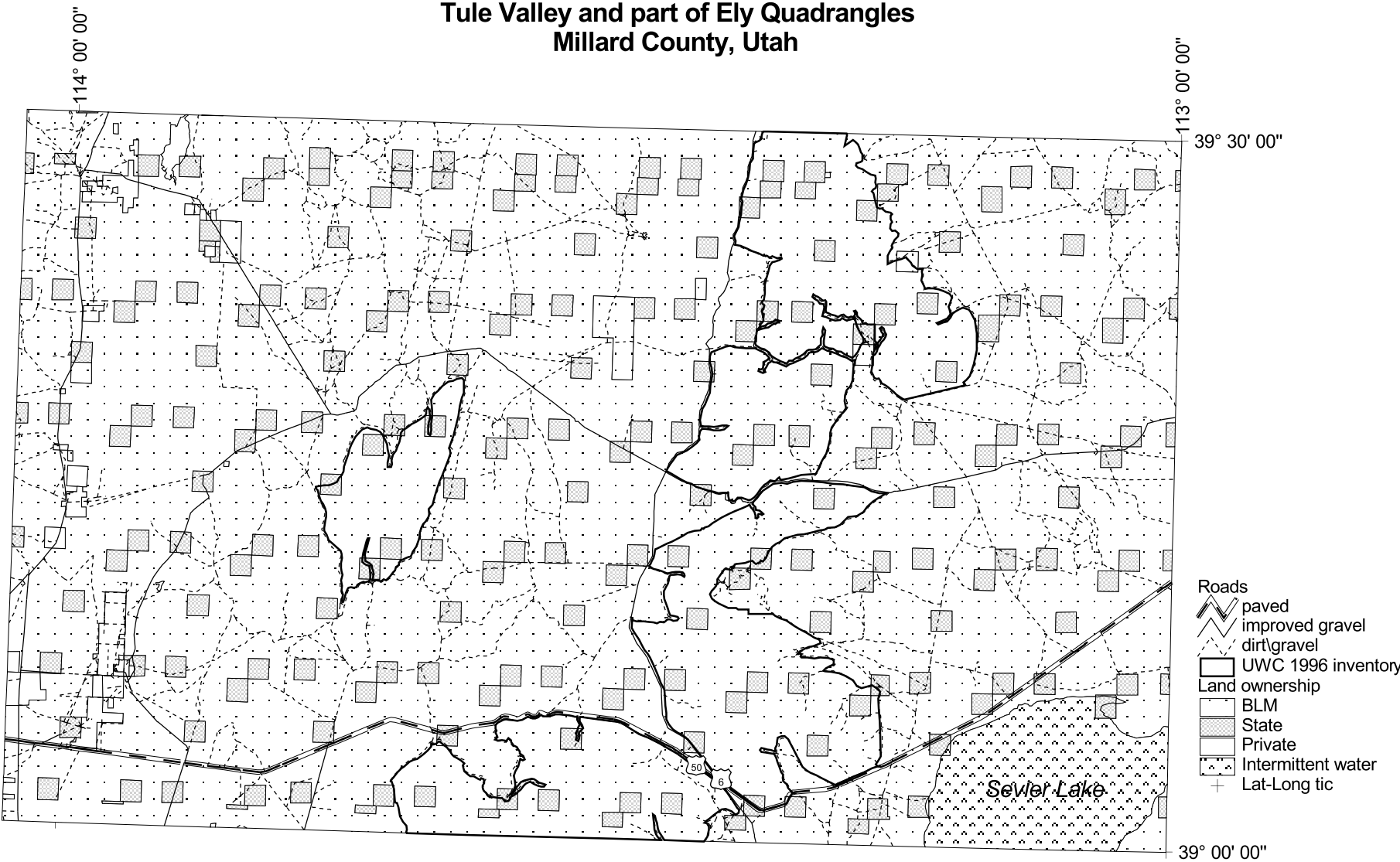
0 5 10 15 20 Miles



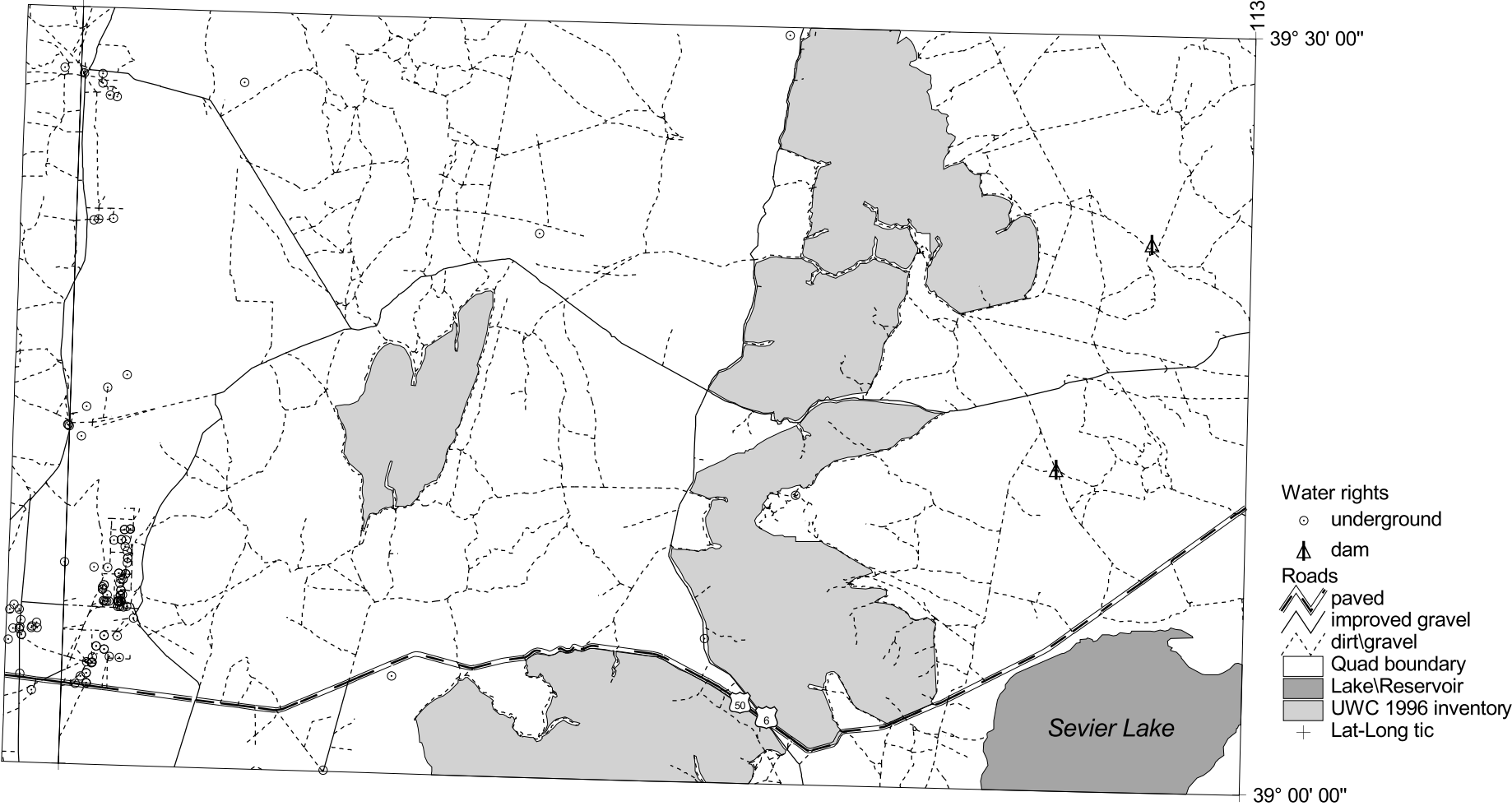
Energy and Mineral Locations Tule Valley and part of Ely Quadrangles Millard County, Utah



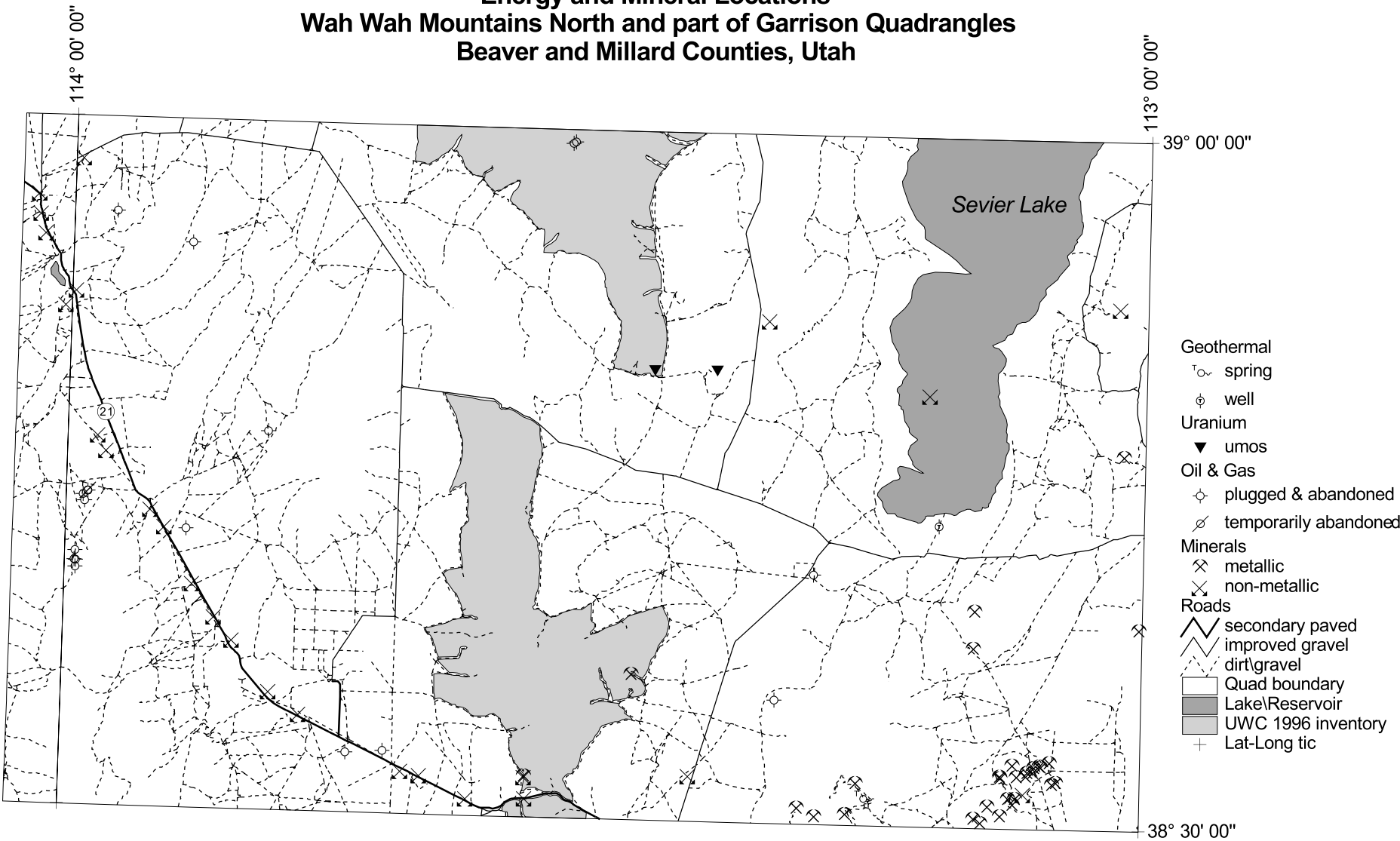
Land Ownership Tule Valley and part of Ely Quadrangles Millard County, Utah



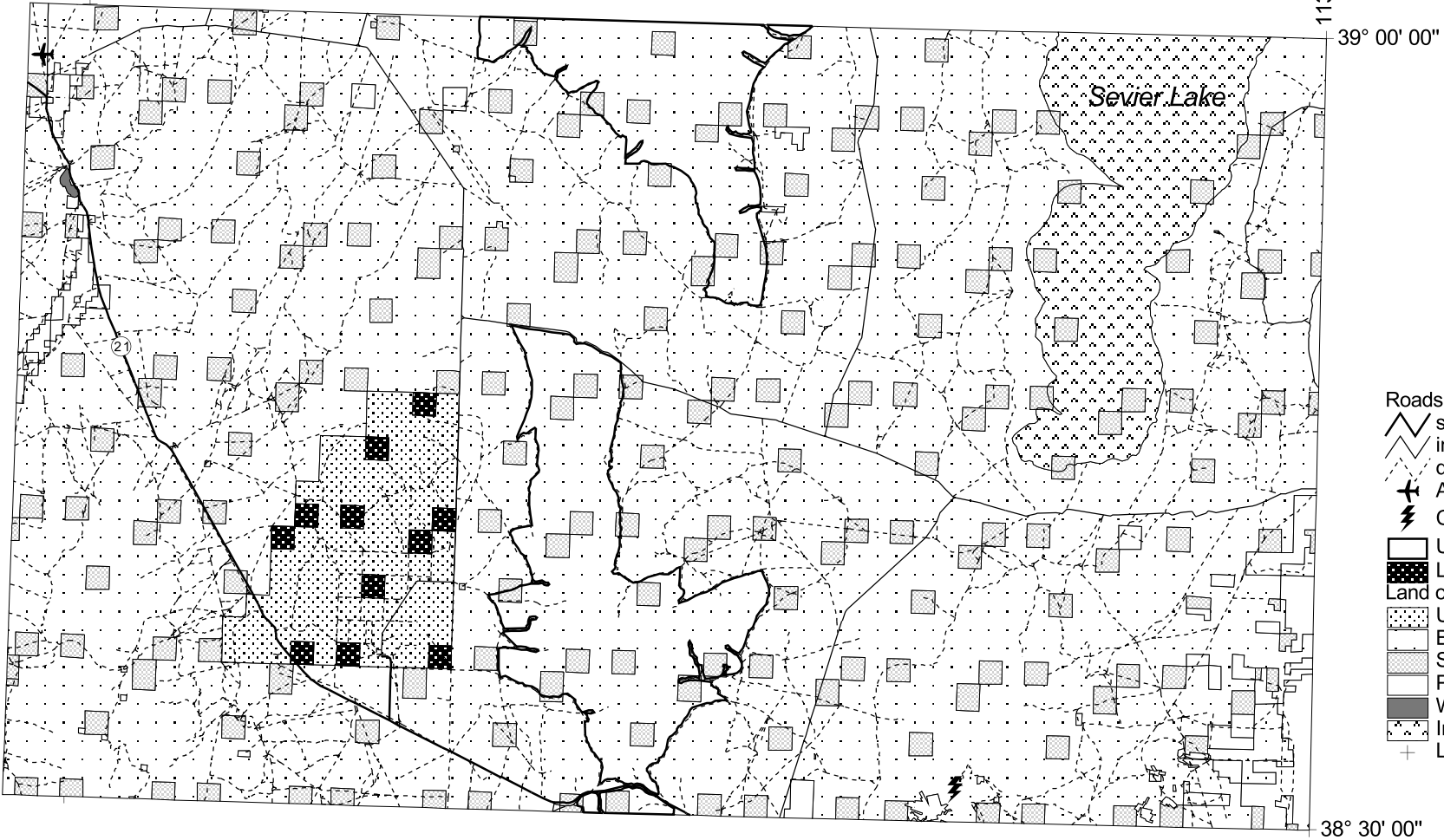
Water Rights Locations Tule Valley and part of Ely Quadrangles Millard County, Utah



Energy and Mineral Locations Wah Wah Mountains North and part of Garrison Quadrangles Beaver and Millard Counties, Utah



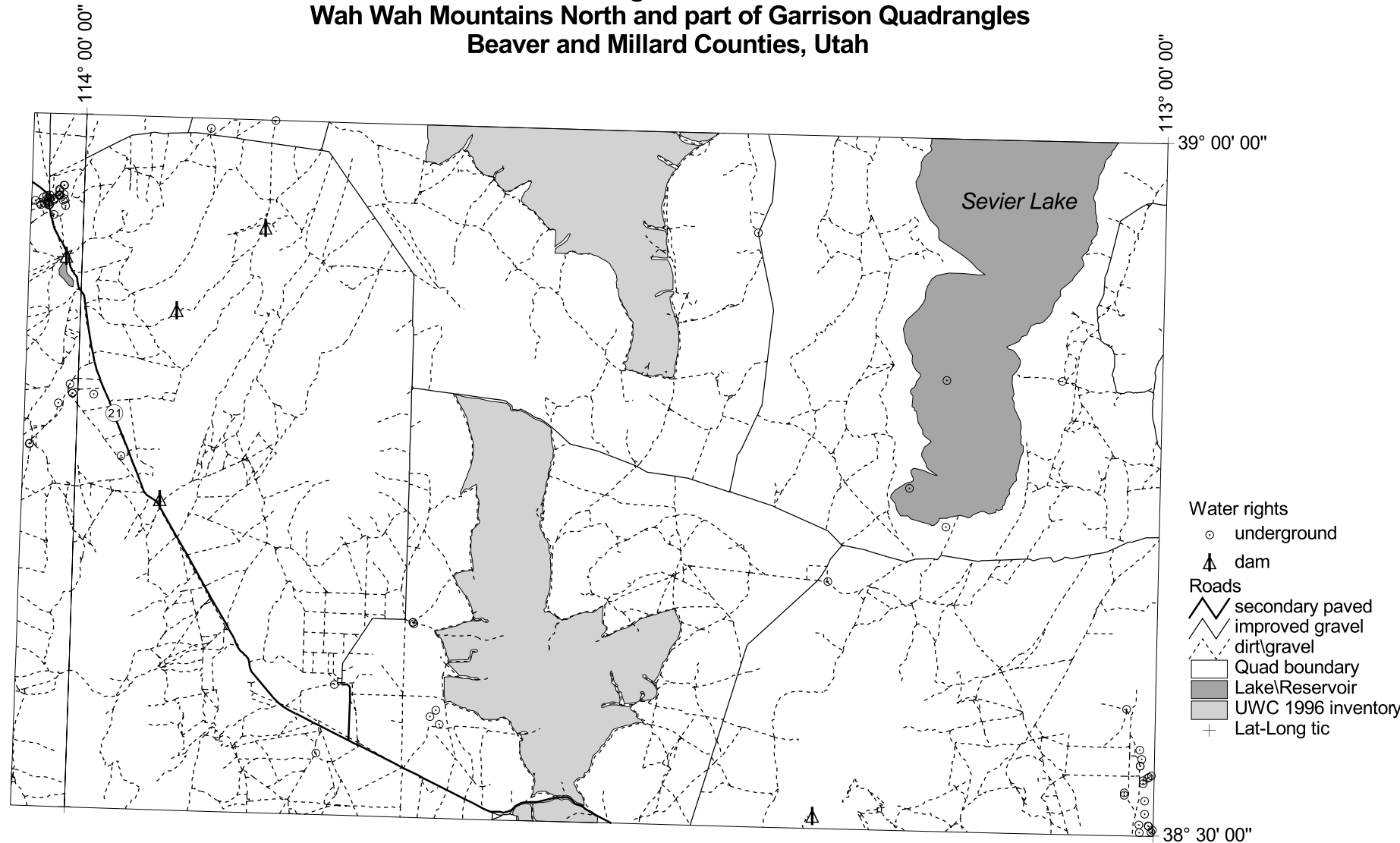
Land Ownership Wah Wah Mountains North and part of Garrison Quadrangles Beaver and Millard Counties, Utah



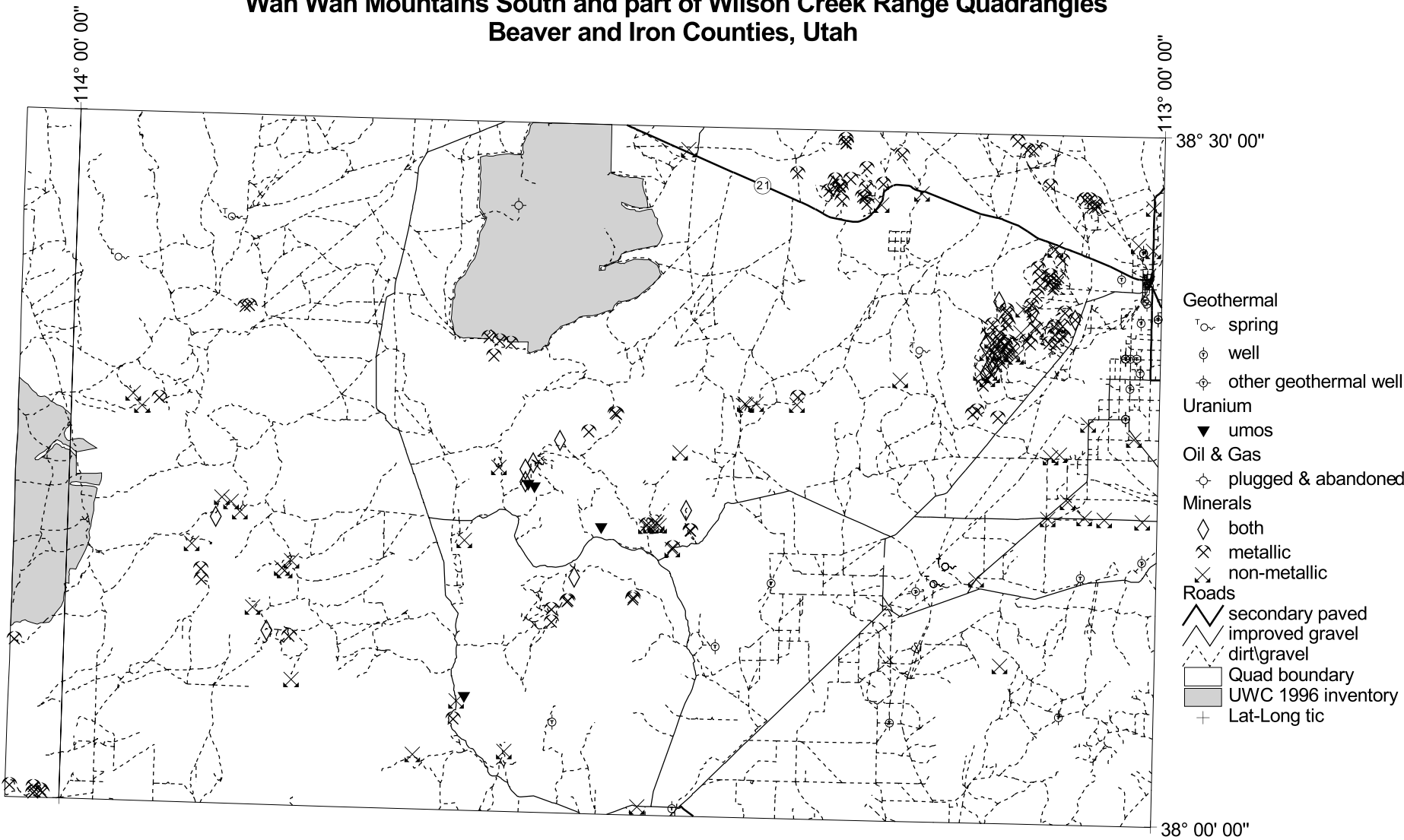
0 5 10 15 20 Miles



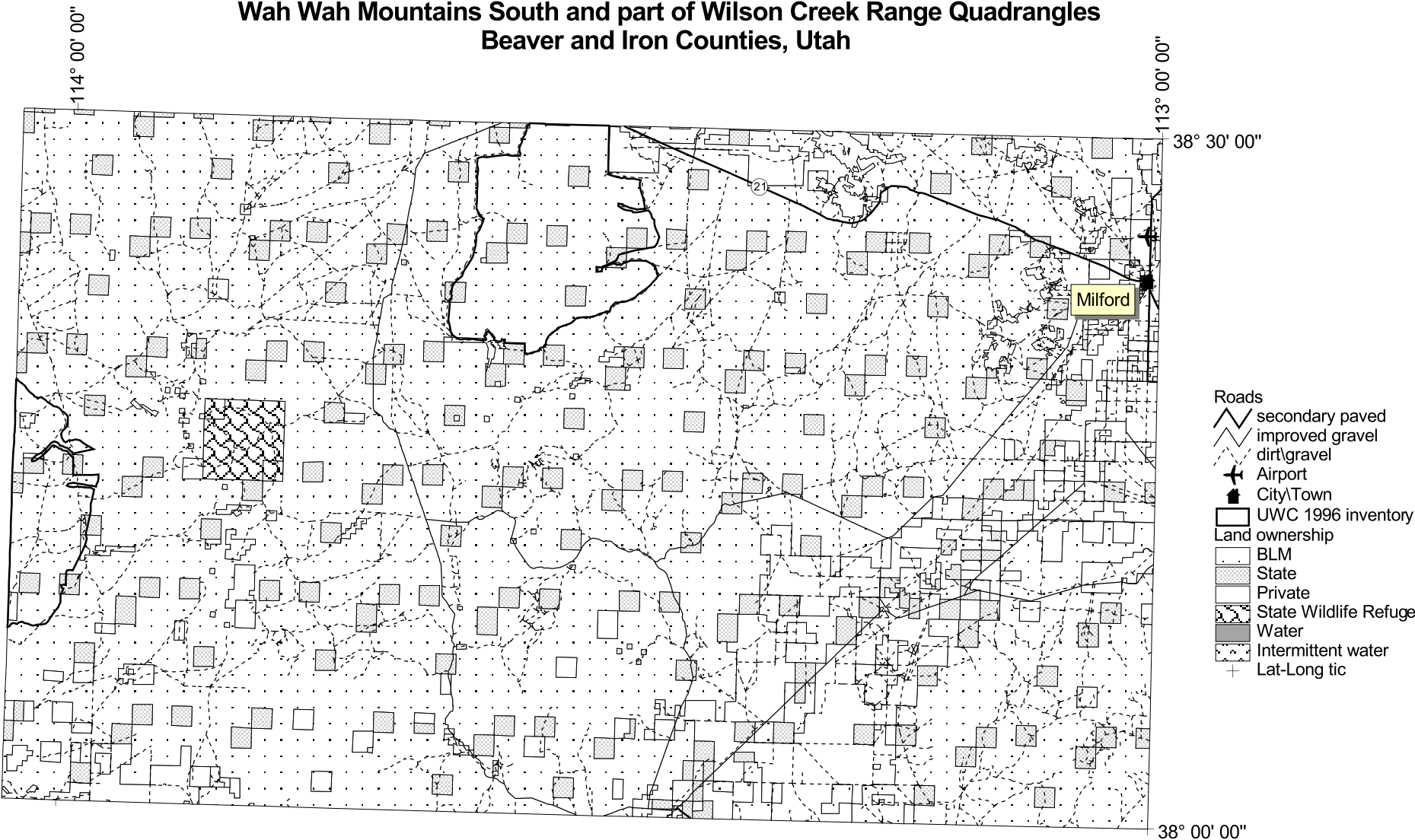
Water Rights Locations Wah Wah Mountains North and part of Garrison Quadrangles Beaver and Millard Counties, Utah



Energy and Mineral Locations Wah Wah Mountains South and part of Wilson Creek Range Quadrangles Beaver and Iron Counties, Utah



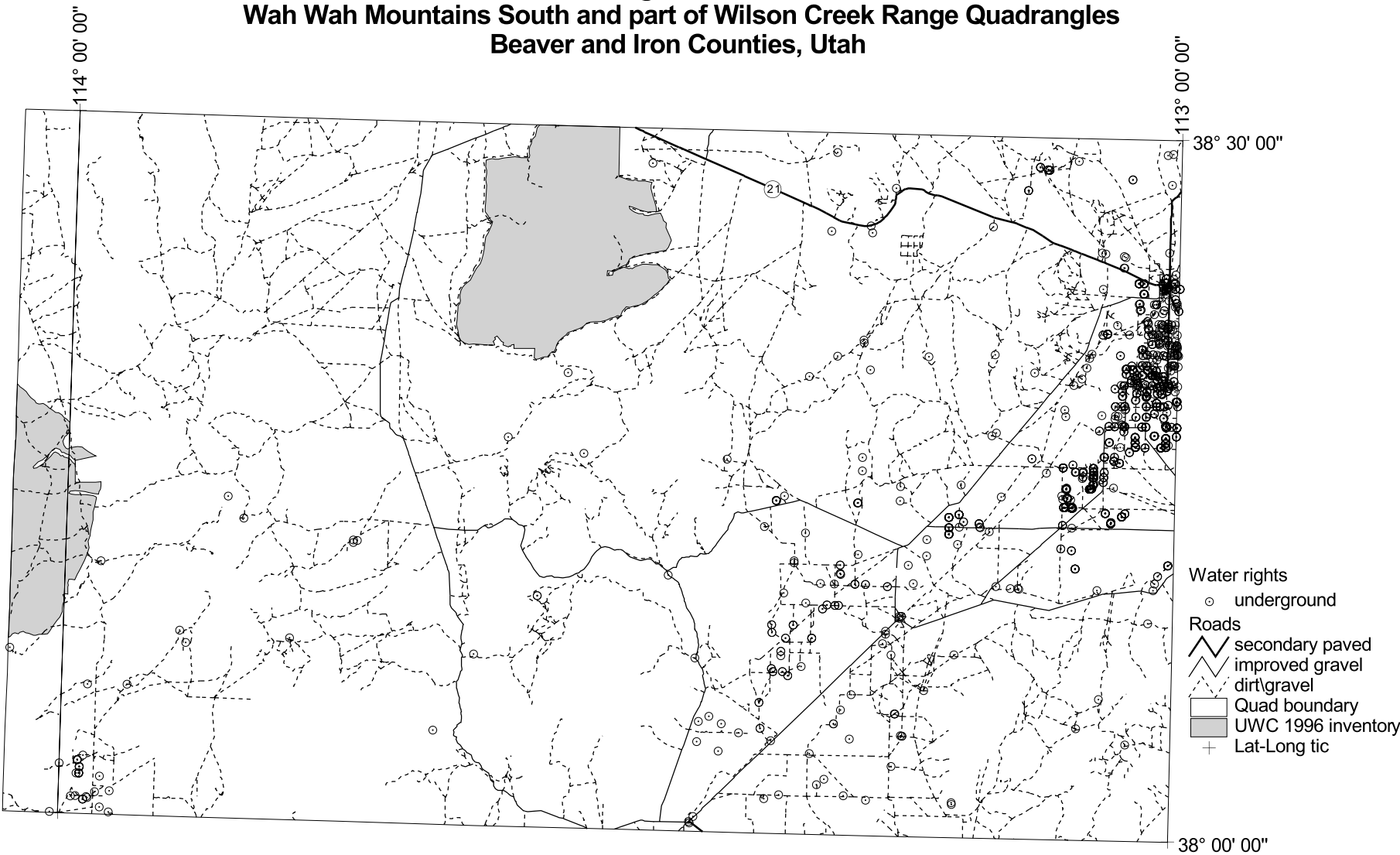
Land Ownership Wah Wah Mountains South and part of Wilson Creek Range Quadrangles Beaver and Iron Counties, Utah



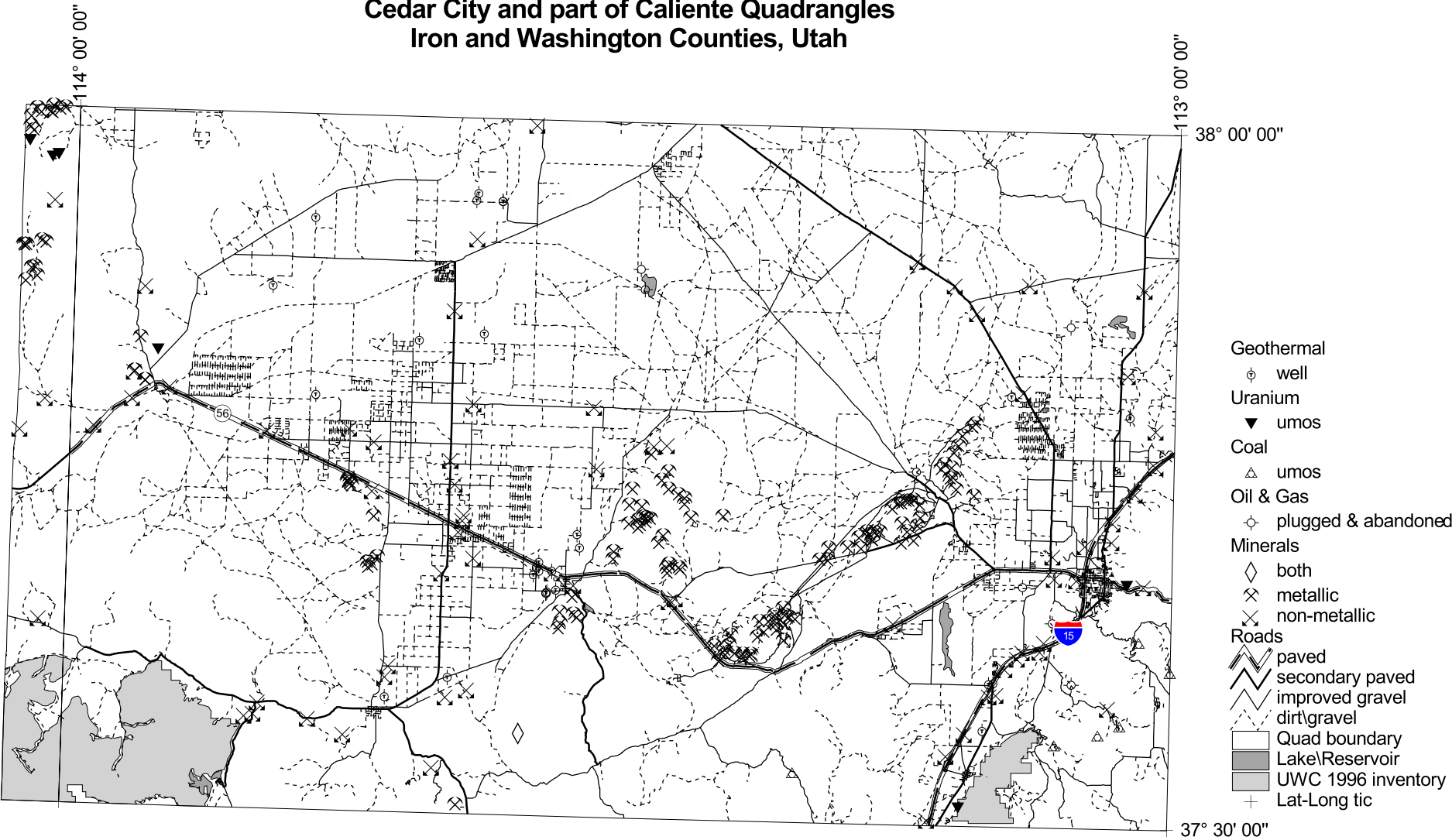
0 5 10 15 20 Miles

N

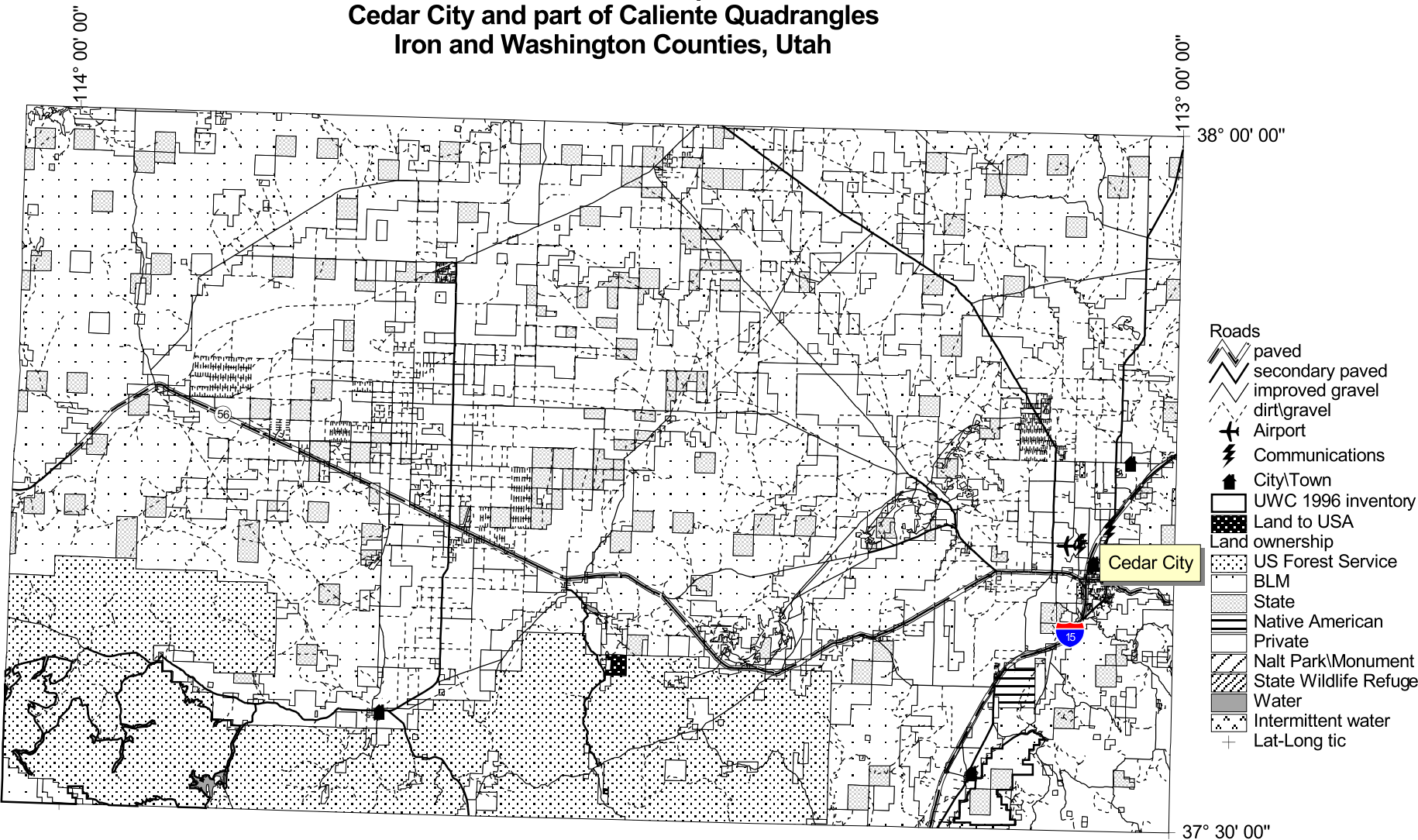
Water Rights Locations Wah Wah Mountains South and part of Wilson Creek Range Quadrangles Beaver and Iron Counties, Utah



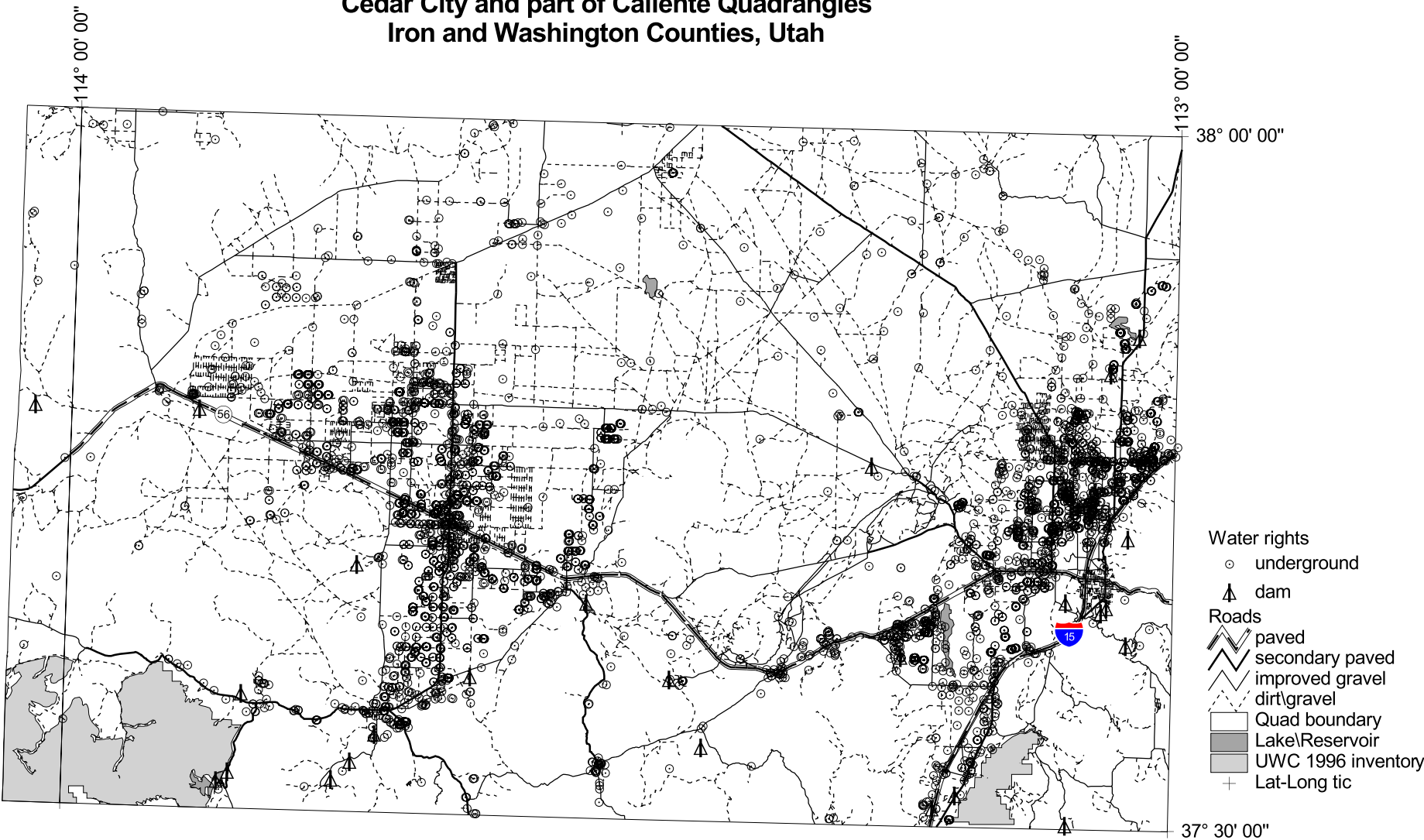
Energy and Mineral Locations Cedar City and part of Caliente Quadrangles Iron and Washington Counties, Utah



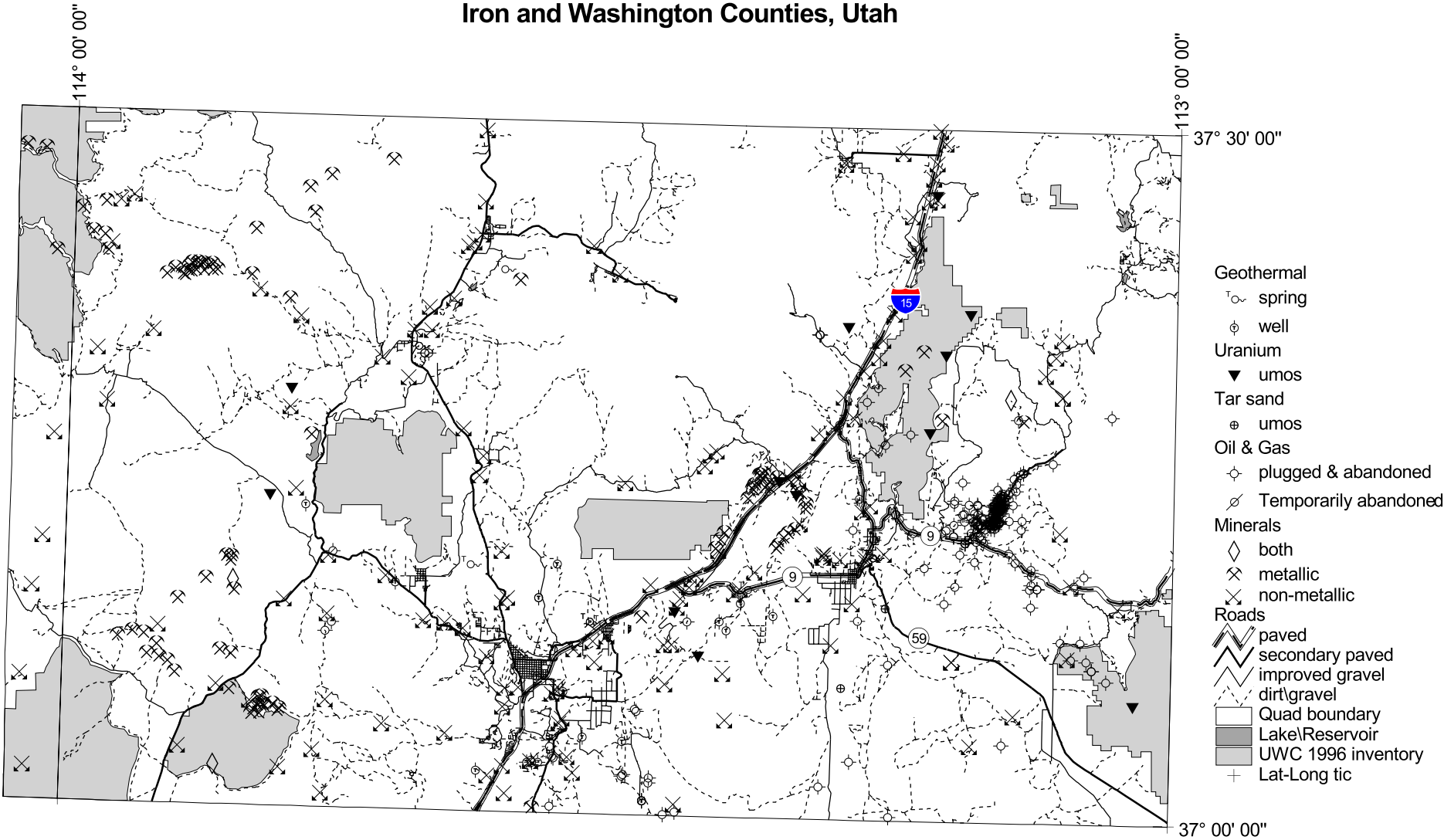
Land Ownership Cedar City and part of Caliente Quadrangles Iron and Washington Counties, Utah



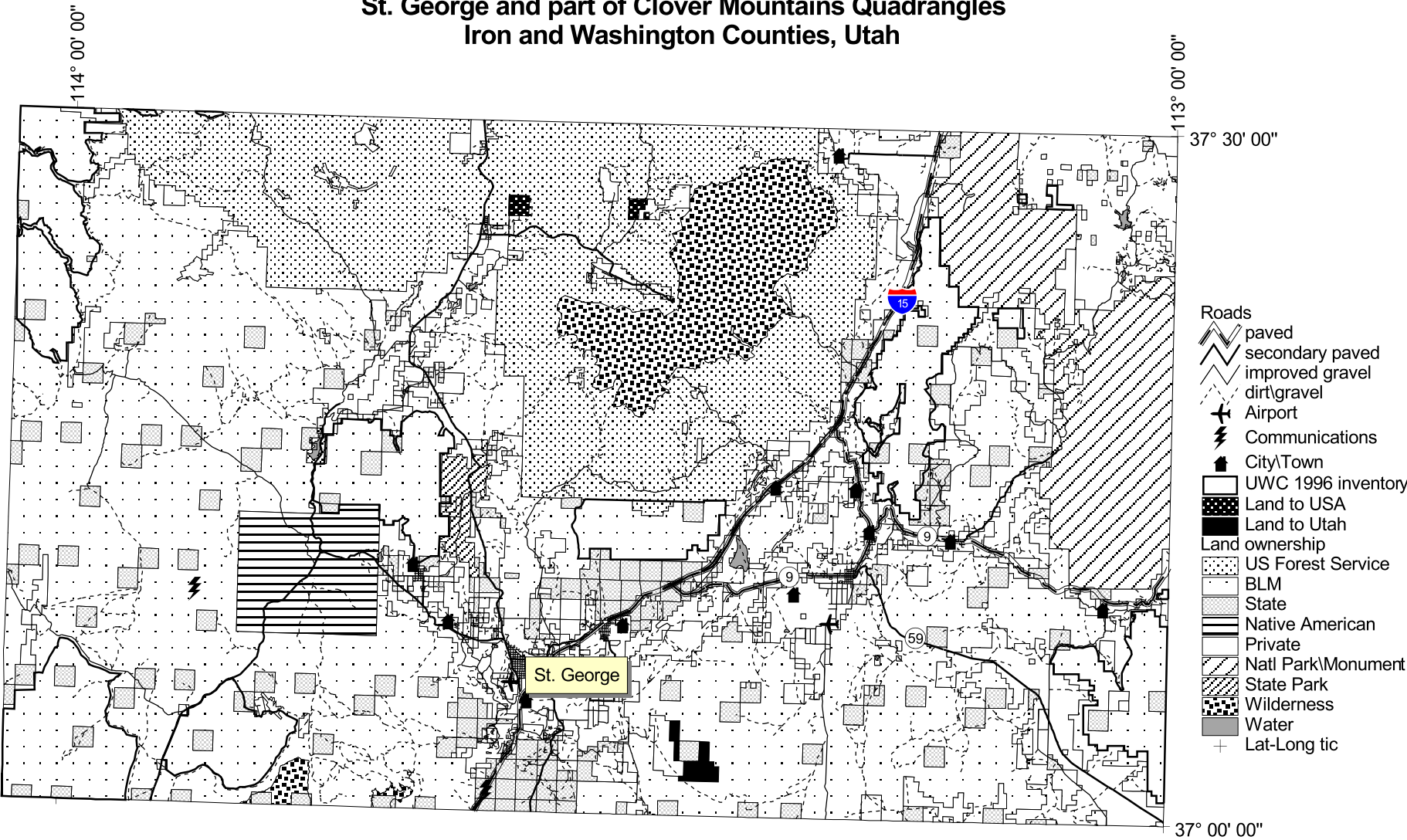
Water Rights Locations Cedar City and part of Caliente Quadrangles Iron and Washington Counties, Utah



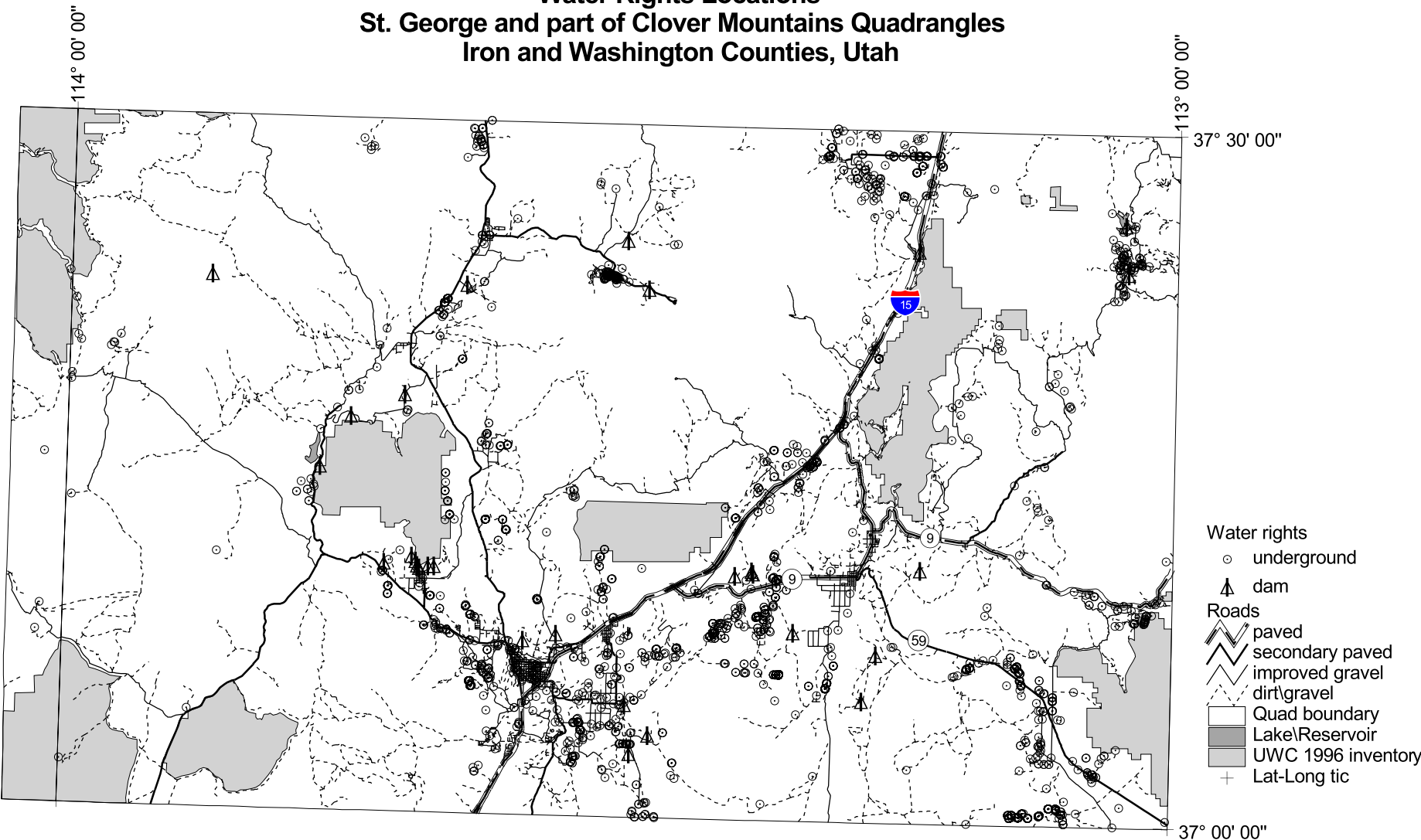
Energy and Mineral Locations St. George and part of Clover Mountains Quadrangles Iron and Washington Counties, Utah



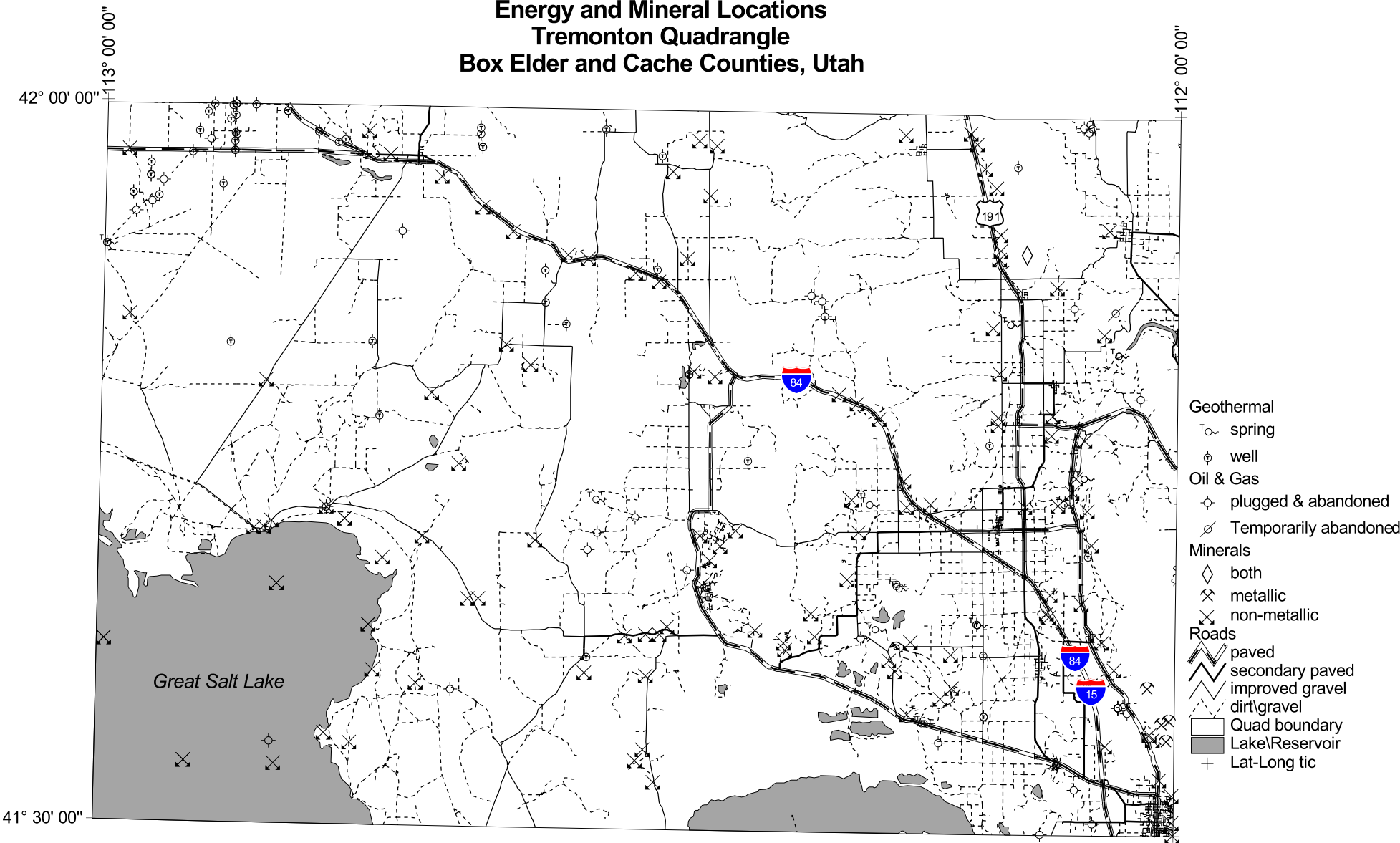
Land Ownership St. George and part of Clover Mountains Quadrangles Iron and Washington Counties, Utah



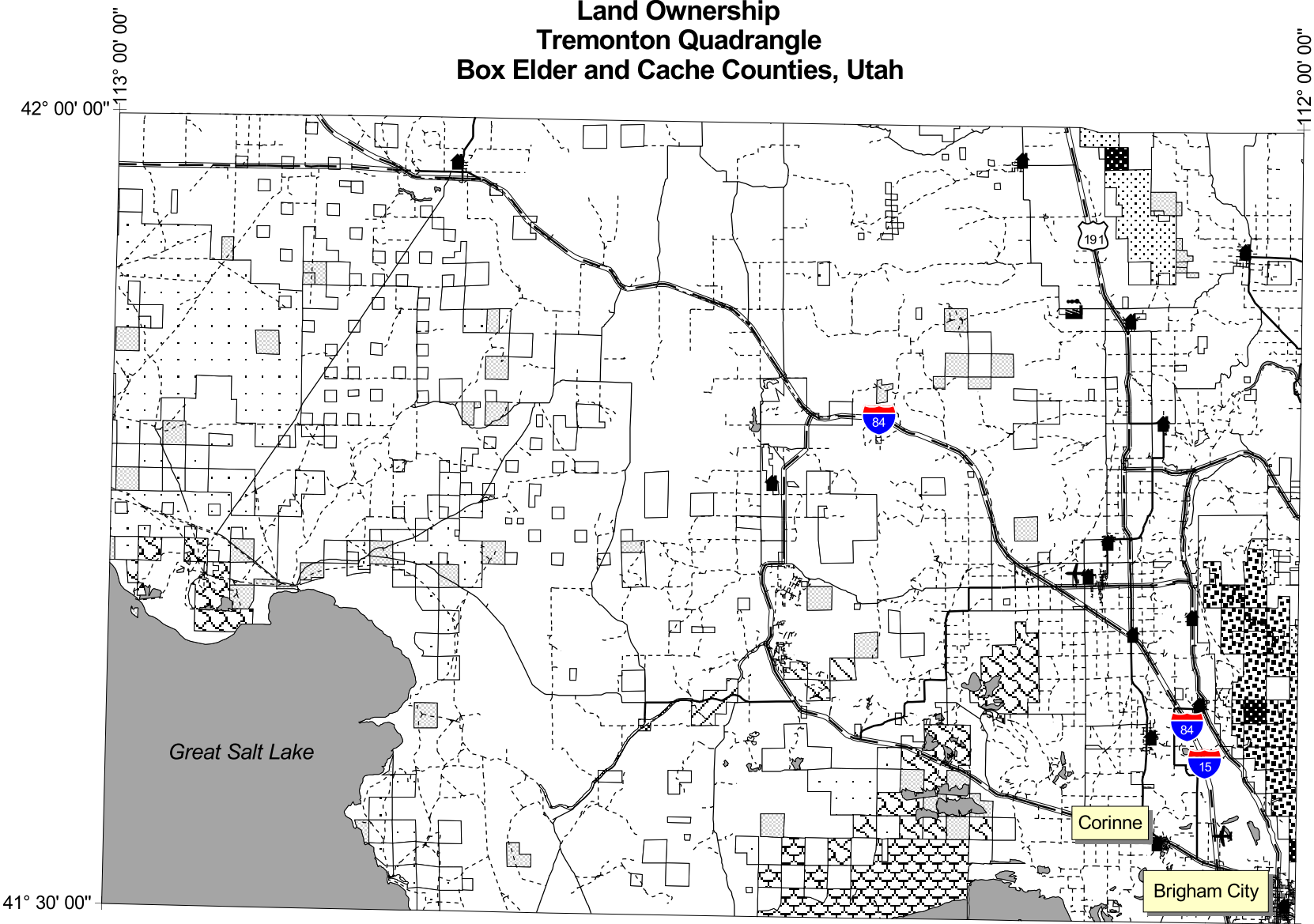
Water Rights Locations St. George and part of Clover Mountains Quadrangles Iron and Washington Counties, Utah



Energy and Mineral Locations Tremonton Quadrangle Box Elder and Cache Counties, Utah



Land Ownership Tremonton Quadrangle Box Elder and Cache Counties, Utah



Roads

- paved
- secondary paved
- improved gravel
- dirt/gravel

Airport

Power plant

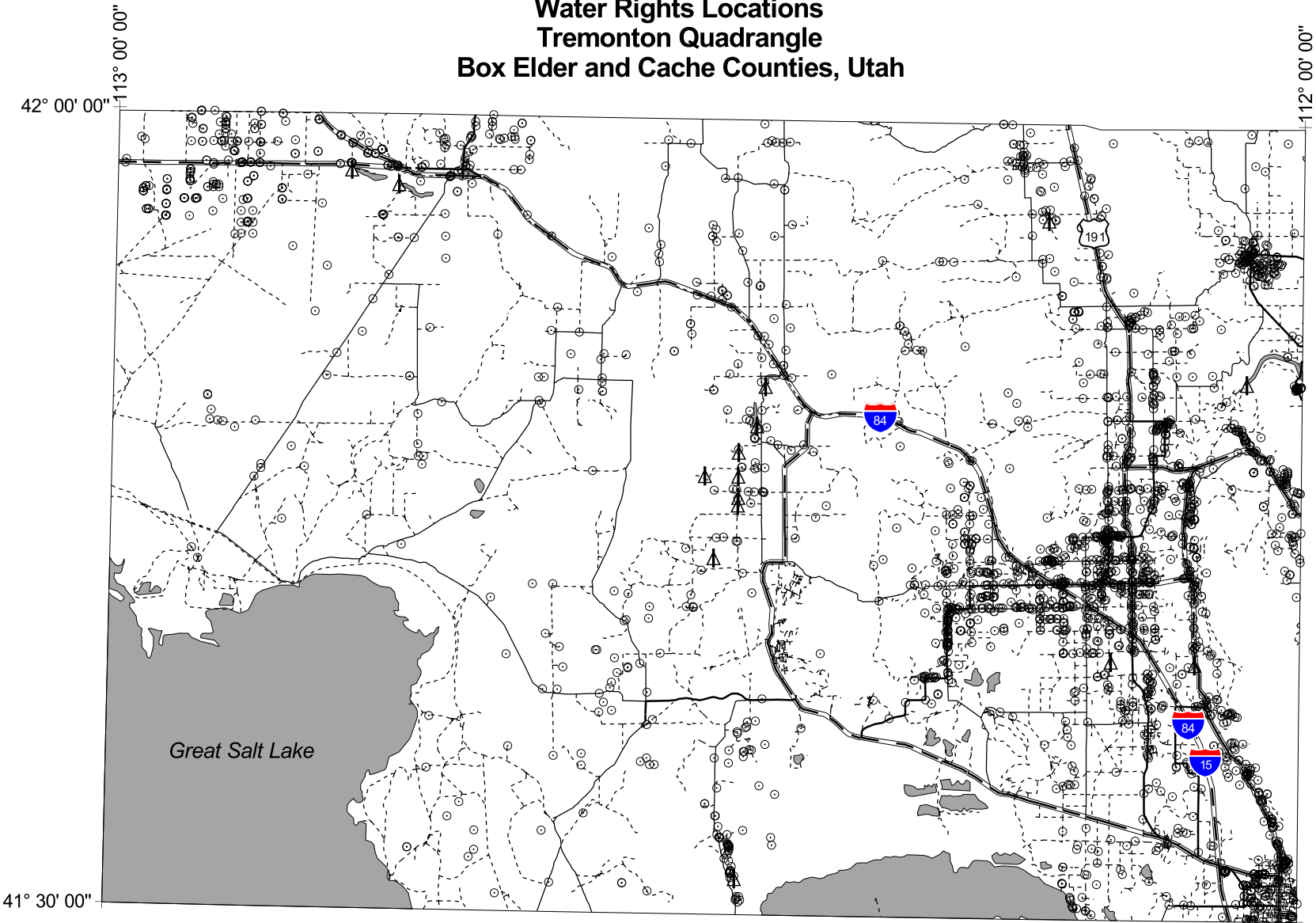
City/Town

Land to USA

Land ownership

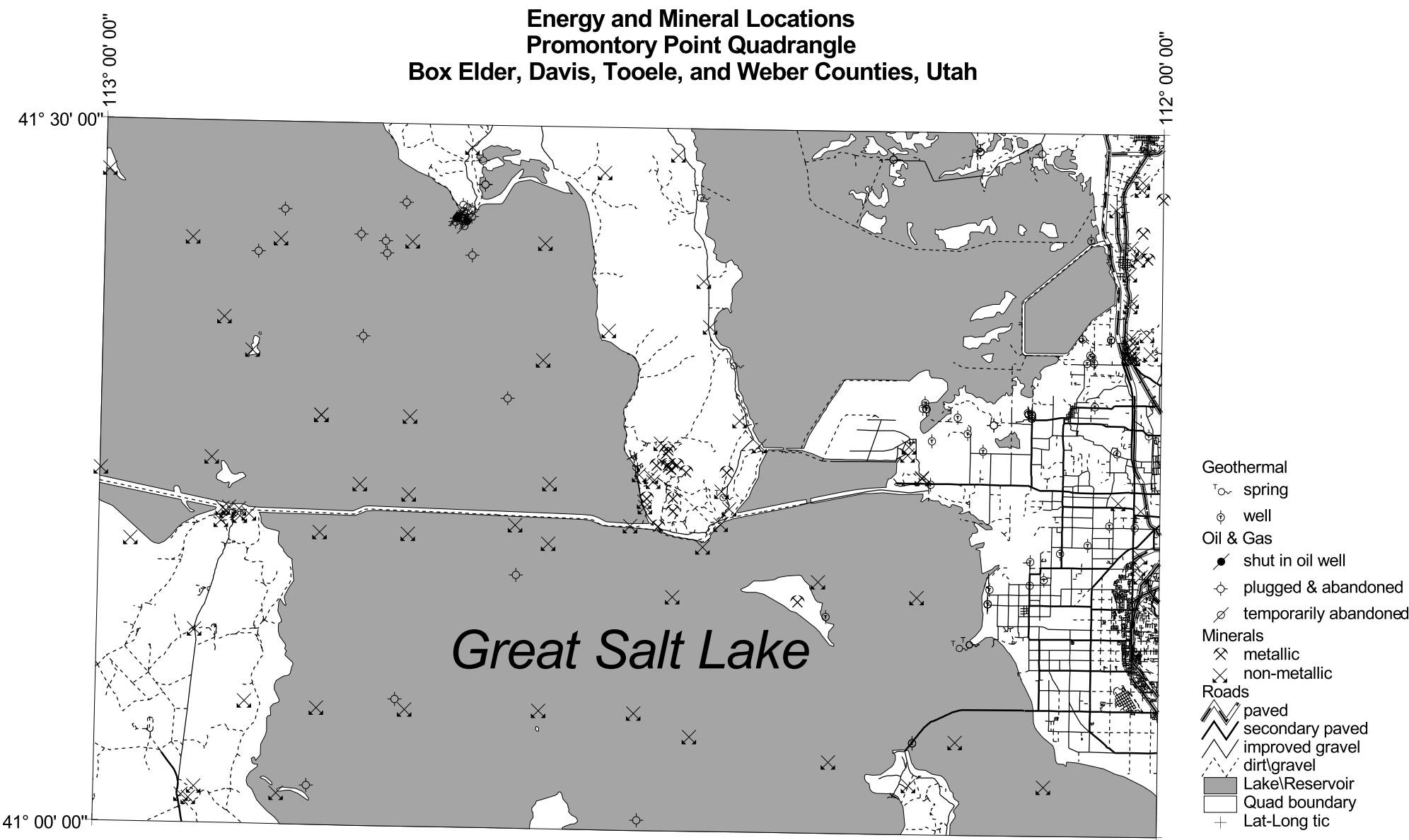
- US Forest Service
- BLM
- State
- Private
- Military
- Natl Park/Monument
- State Wildlife Refuge
- Natl Wildlife Refuge
- Wilderness
- Water
- Intermittent water
- Lat-Long tic

Water Rights Locations Tremonton Quadrangle Box Elder and Cache Counties, Utah

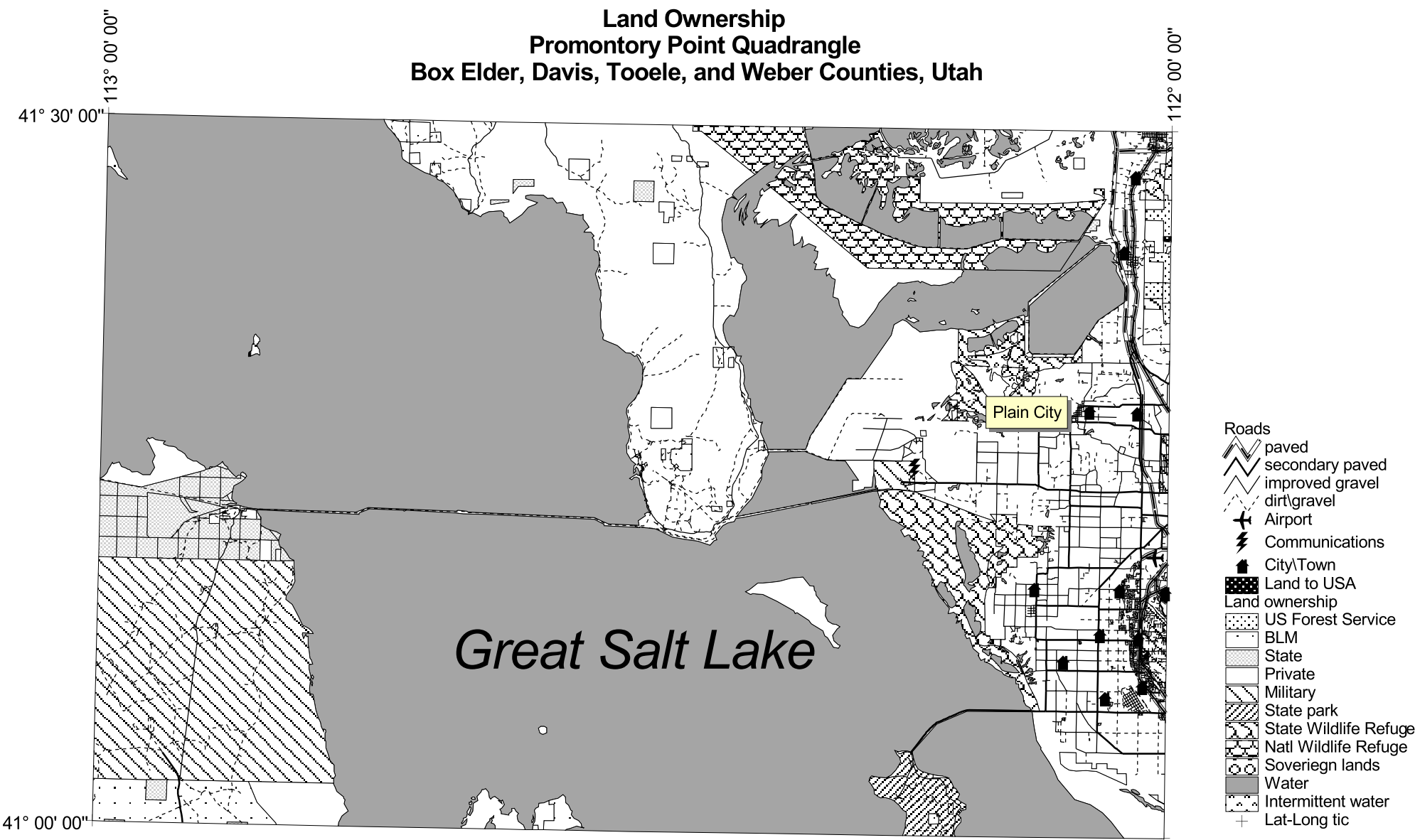


- Water rights**
- underground
 - ▲ dam
- Roads**
- paved
 - secondary paved
 - improved gravel
 - - - dirt/gravel
 - Quad boundary
 - Lake/Reservoir
 - + Lat-Long tic

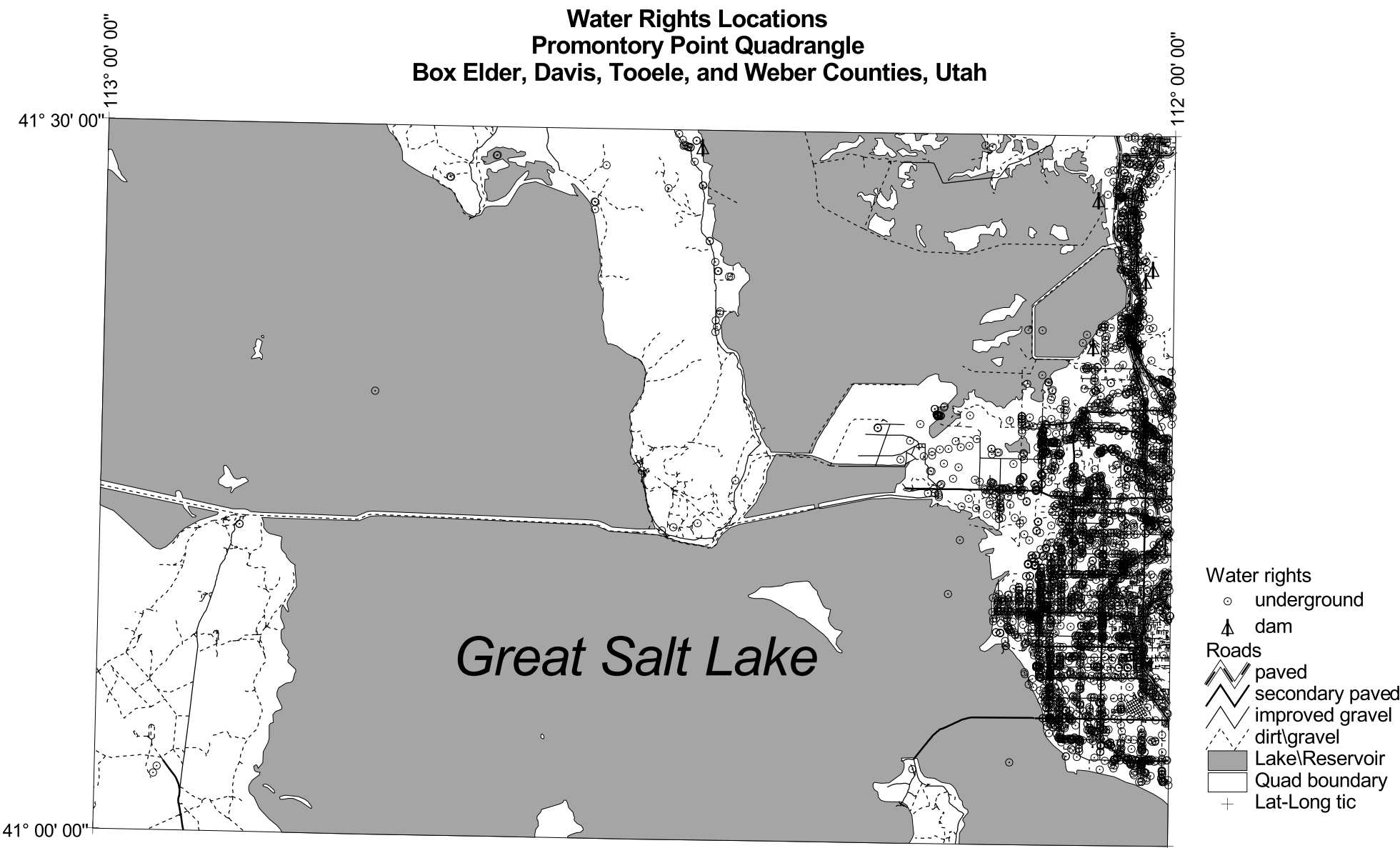
Energy and Mineral Locations Promontory Point Quadrangle Box Elder, Davis, Tooele, and Weber Counties, Utah



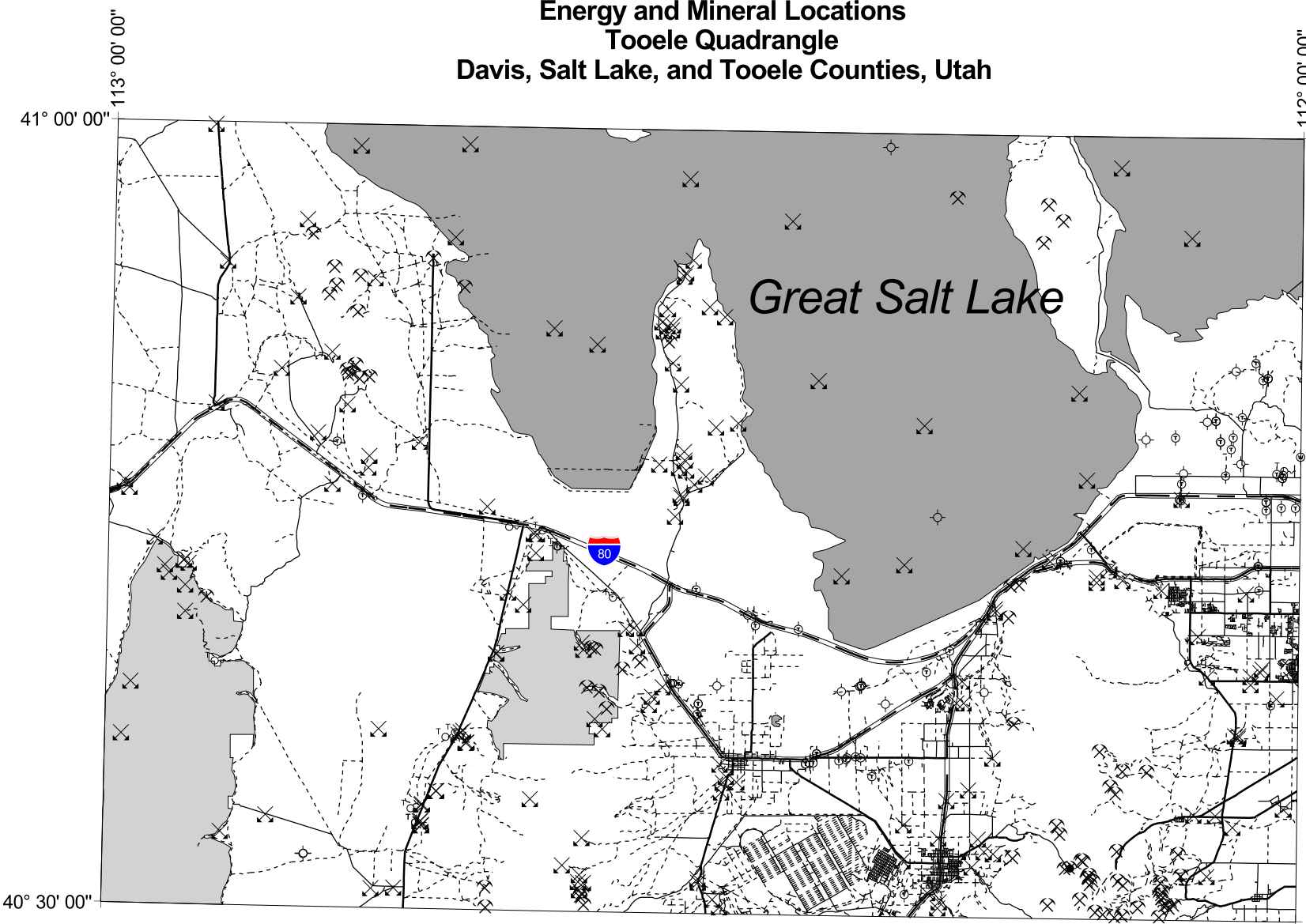
Land Ownership Promontory Point Quadrangle Box Elder, Davis, Tooele, and Weber Counties, Utah



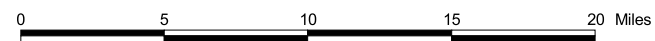
Water Rights Locations
Promontory Point Quadrangle
Box Elder, Davis, Tooele, and Weber Counties, Utah



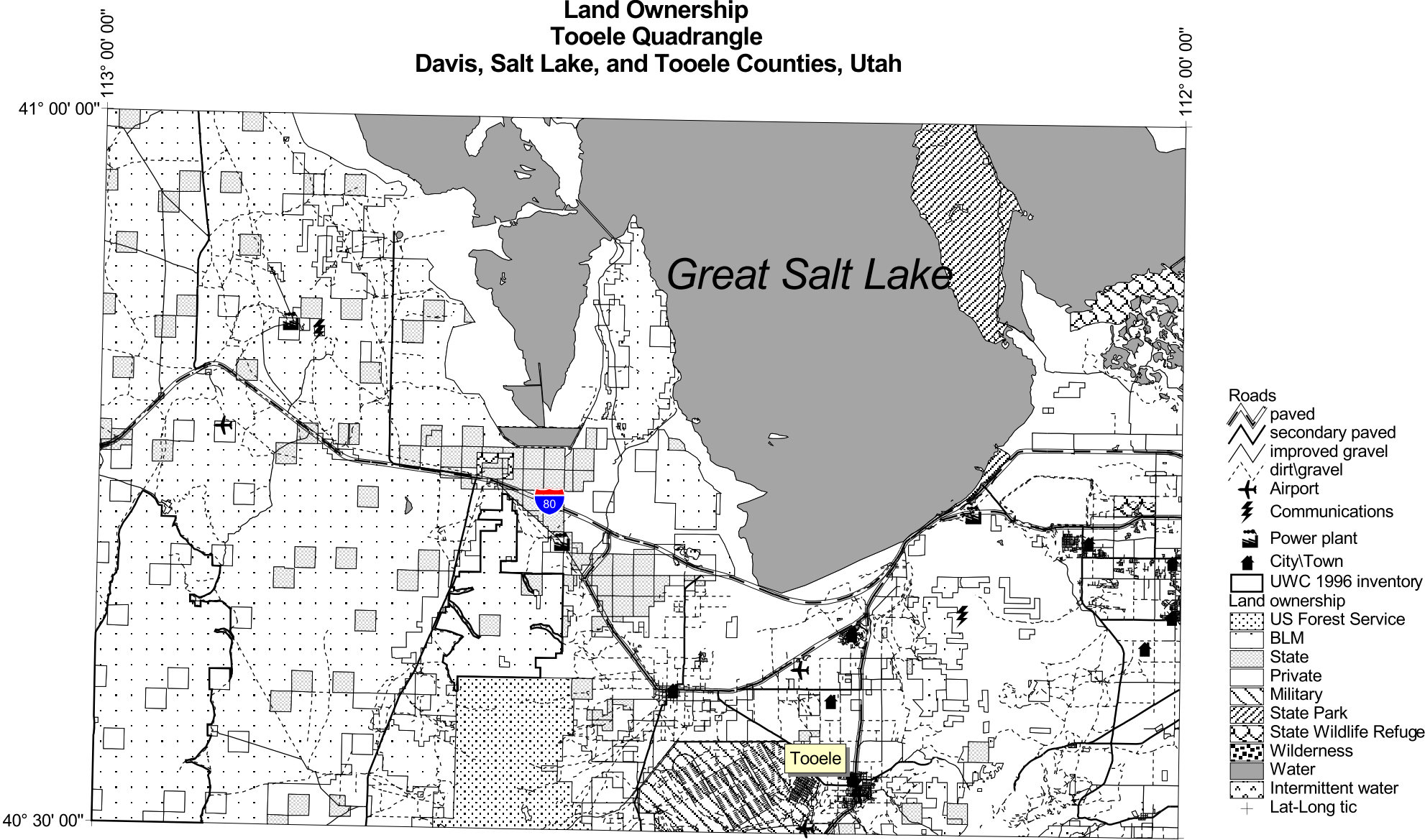
Energy and Mineral Locations Tooele Quadrangle Davis, Salt Lake, and Tooele Counties, Utah



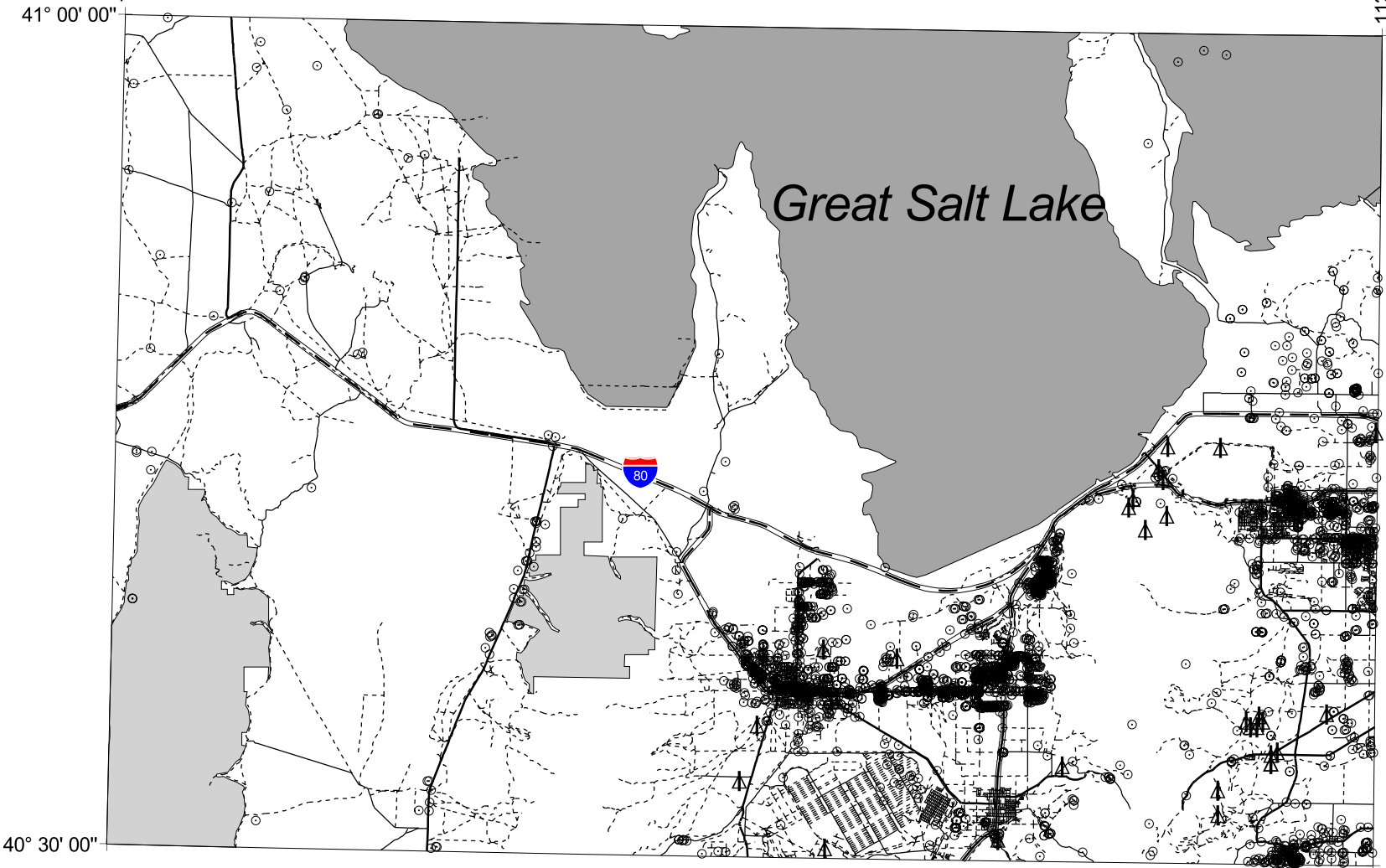
- Geothermal
 - spring
 - tunnel
 - ⊕ well
 - ⊕ well(?)
- Oil & Gas
 - abandoned
 - ⊕ plugged & abandoned
 - ⊕ salt water
- Minerals
 - ⊗ metallic
 - ⊗ non-metallic
- Roads
 - ▬ paved
 - ▬ secondary paved
 - ▬ improved gravel
 - ▬ dirt/gravel
- Quad boundary
 - Lake/Reservoir
 - UWC 1996 inventory
 - ⊕ Lat-Long tic



Land Ownership Tooele Quadrangle Davis, Salt Lake, and Tooele Counties, Utah

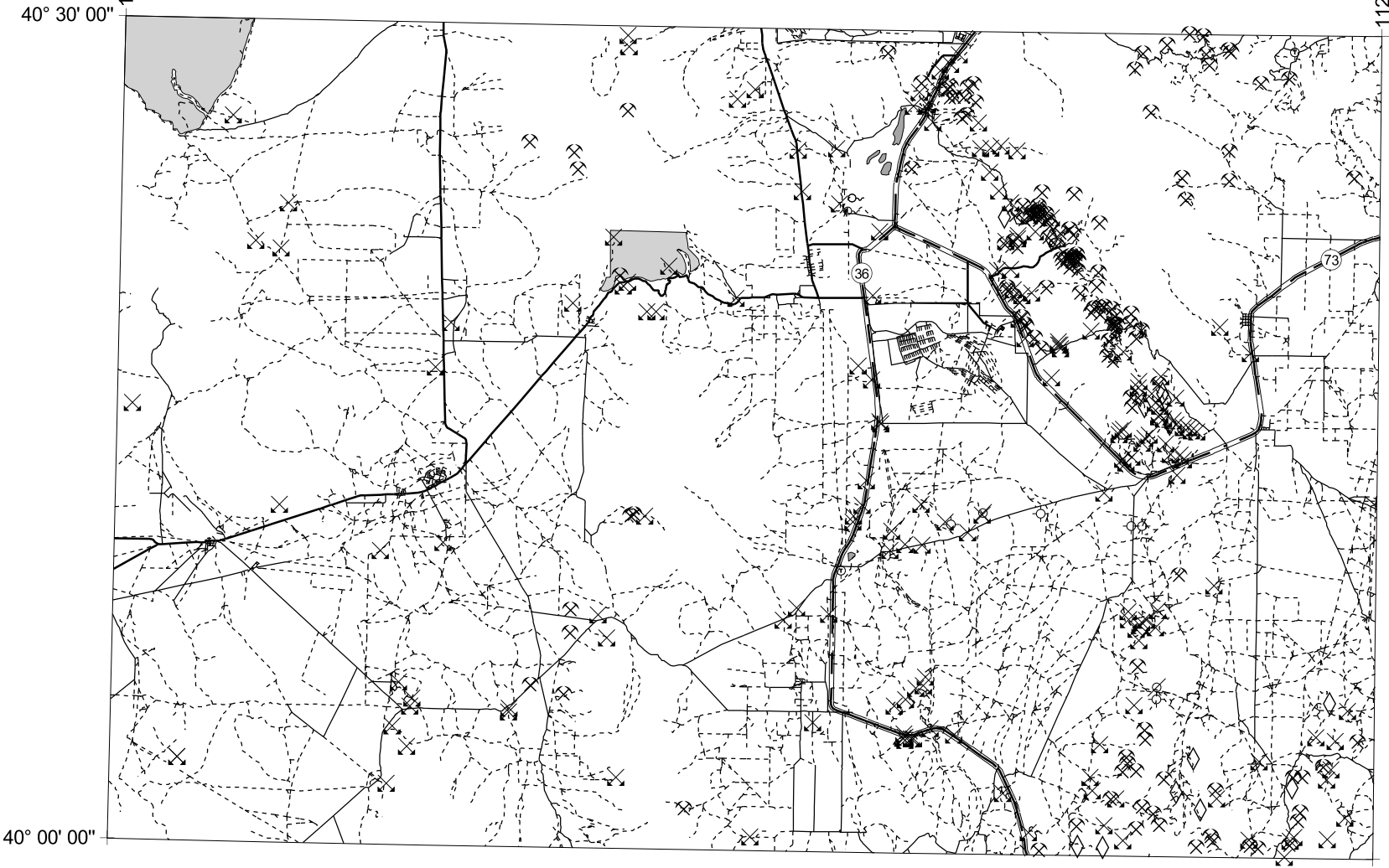


Water Rights Locations Tooele Quadrangle Davis, Salt Lake, and Tooele Counties, Utah



- Water rights**
- underground
 - ▲ dam
- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Other features**
- Quad boundary
 - Lake/Reservoir
 - UWC 1996 inventory
 - + Lat-Long tic

Energy and Mineral Locations Rush Valley Quadrangle Salt Lake, Tooele, and Utah Counties



Geothermal

○ spring

⊕ well

Oil & Gas

⊕ plugged & abandoned

⊗ temporarily abandoned

Minerals

◇ both

⊗ metallic

⊗ non-metallic

Roads

▬ paved

▬ secondary paved

▬ improved gravel

▬ dirt/gravel

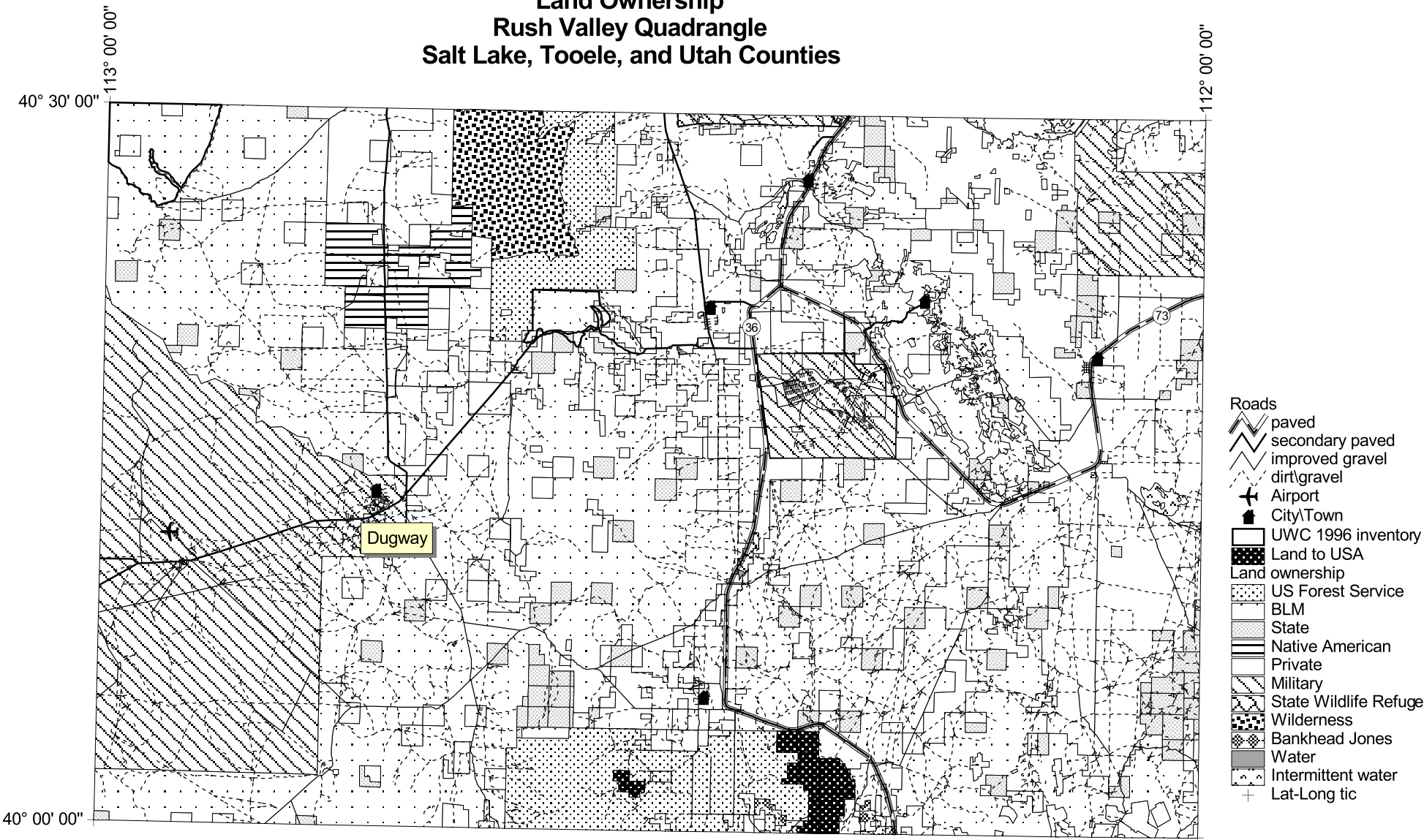
▬ Quad Boundary

▬ Lake/Reservoir

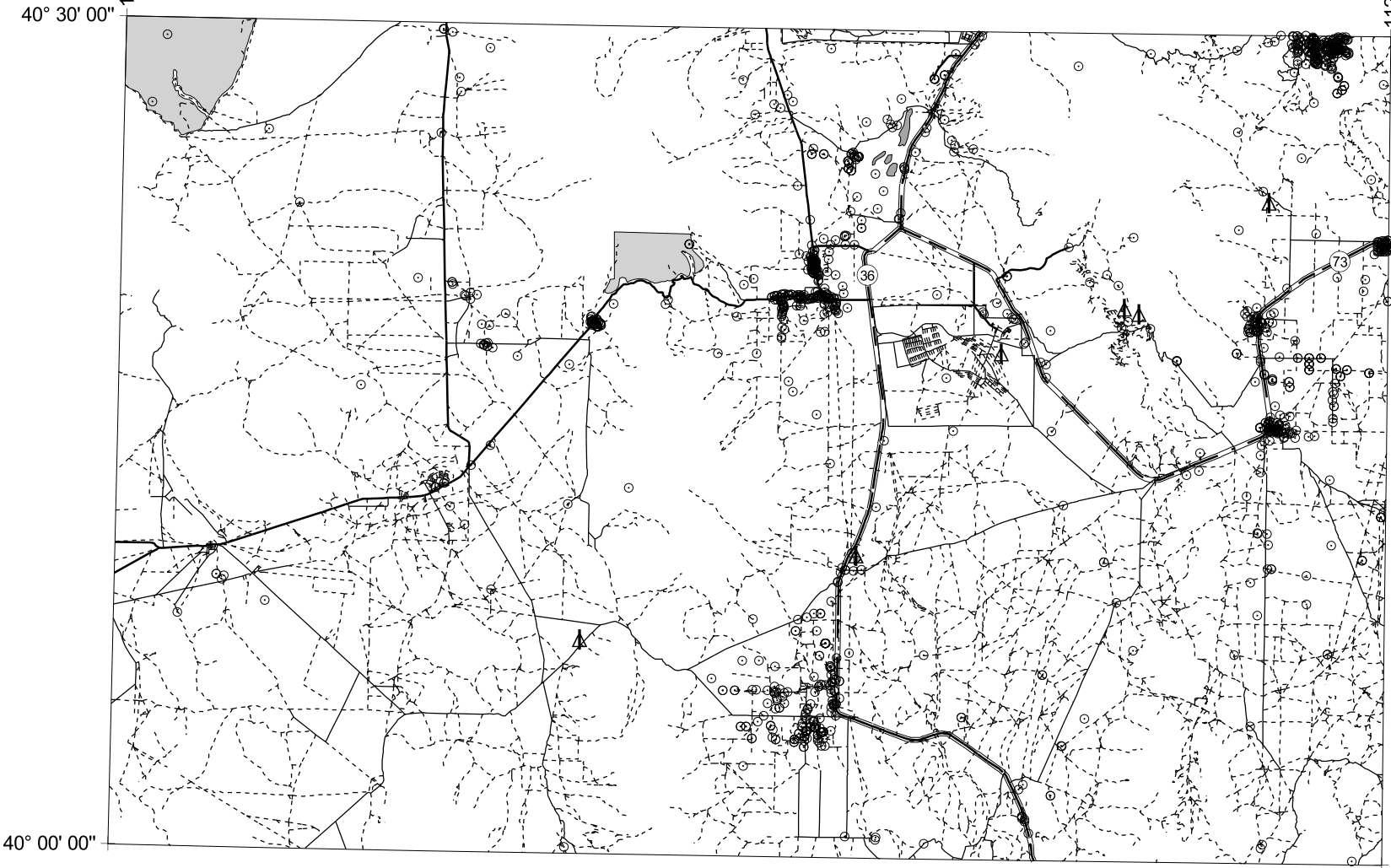
▬ UWC 1996 boundary

⊕ Lat-Long tic

Land Ownership Rush Valley Quadrangle Salt Lake, Tooele, and Utah Counties

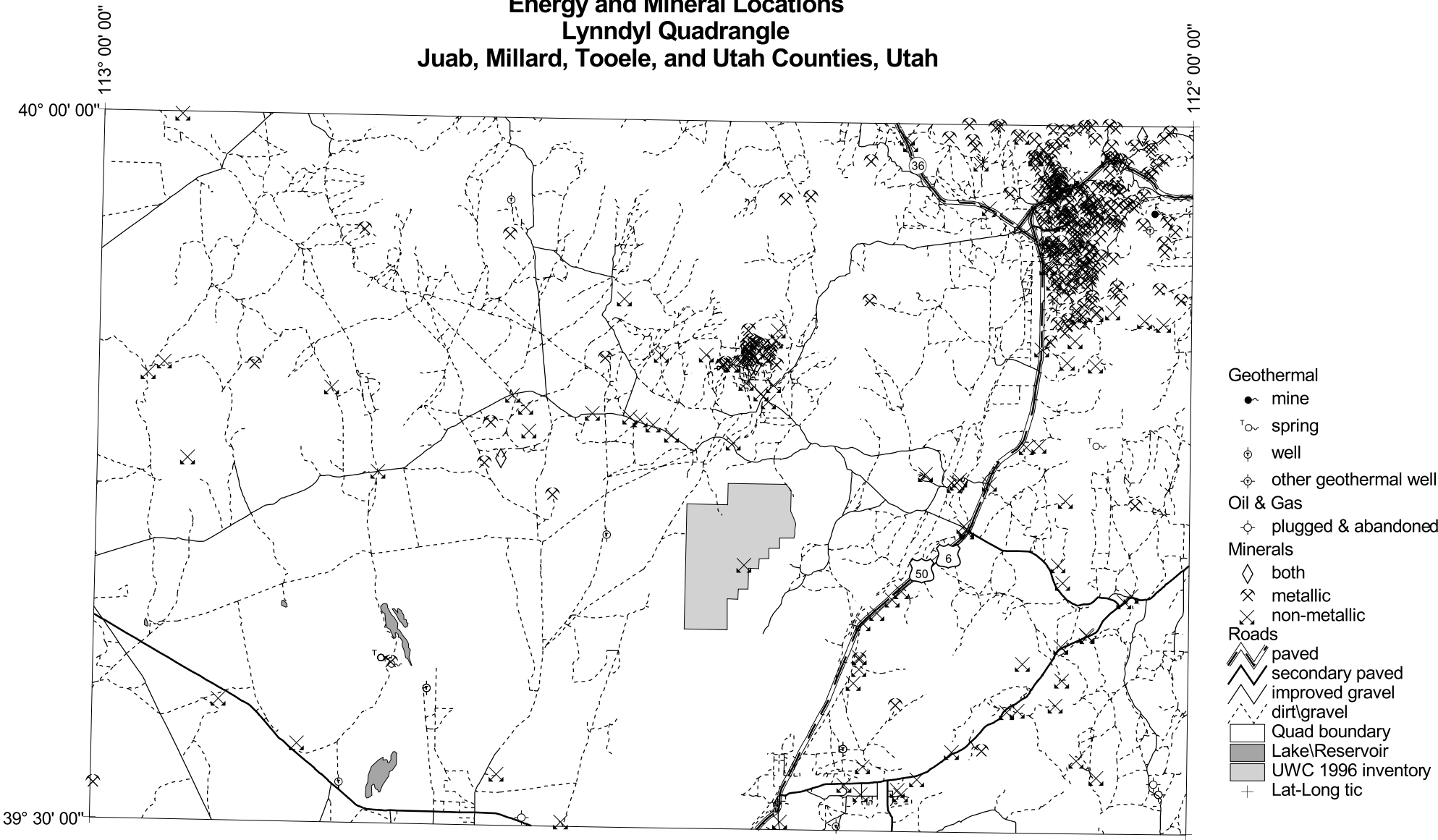


Water Rights Locations Rush Valley Quadrangle Salt Lake, Tooele, and Utah Counties

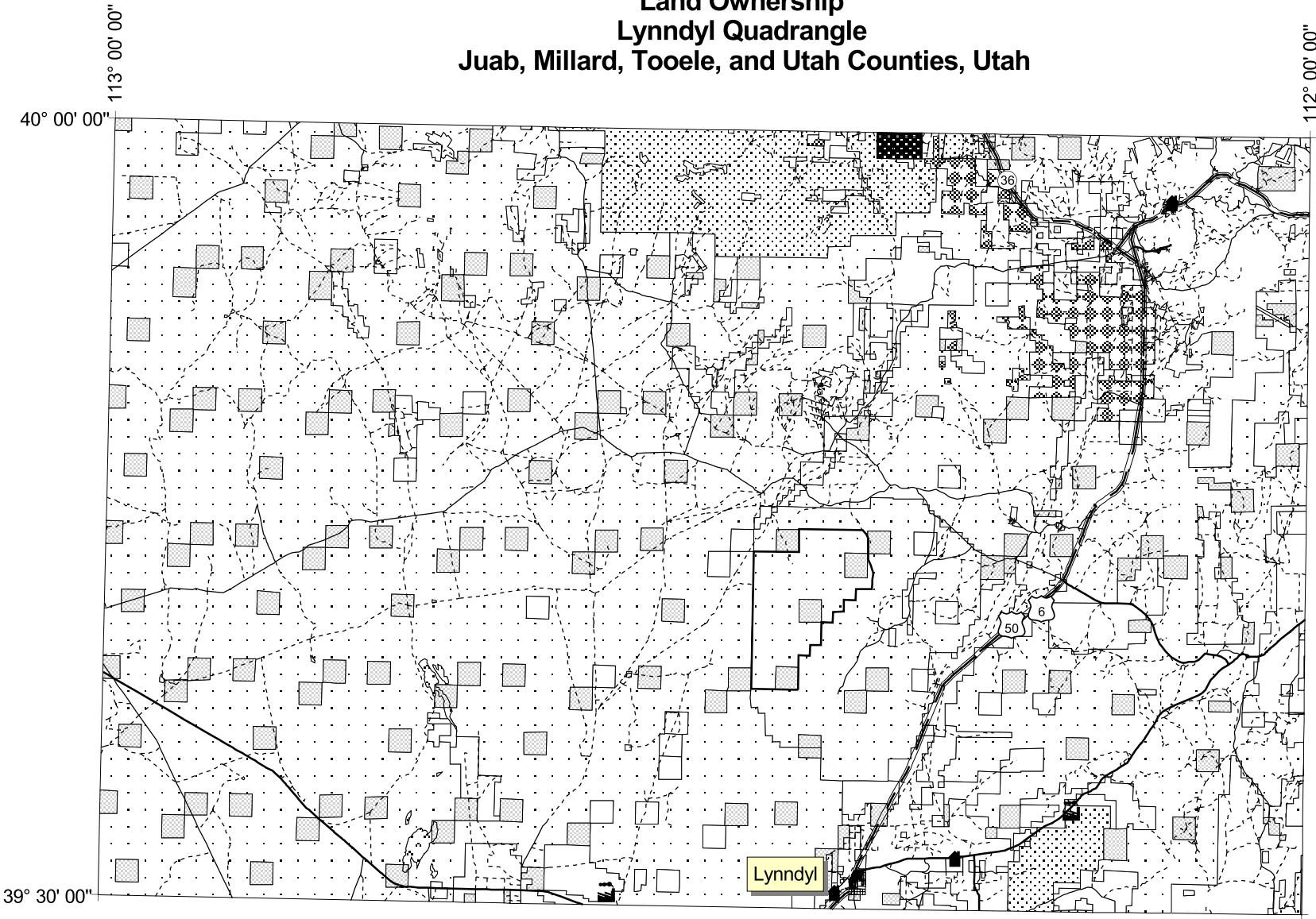


- Water rights**
- underground
 - ▲ dam
- Roads**
- ▬ paved
 - ▬ secondary paved
 - ▬ improved gravel
 - ▬ dirt/gravel
- Quad Boundary
 ■ Lake/Reservoir
 ■ UWC 1996 boundary
 + Lat-Long tic

Energy and Mineral Locations Lynndyl Quadrangle Juab, Millard, Tooele, and Utah Counties, Utah

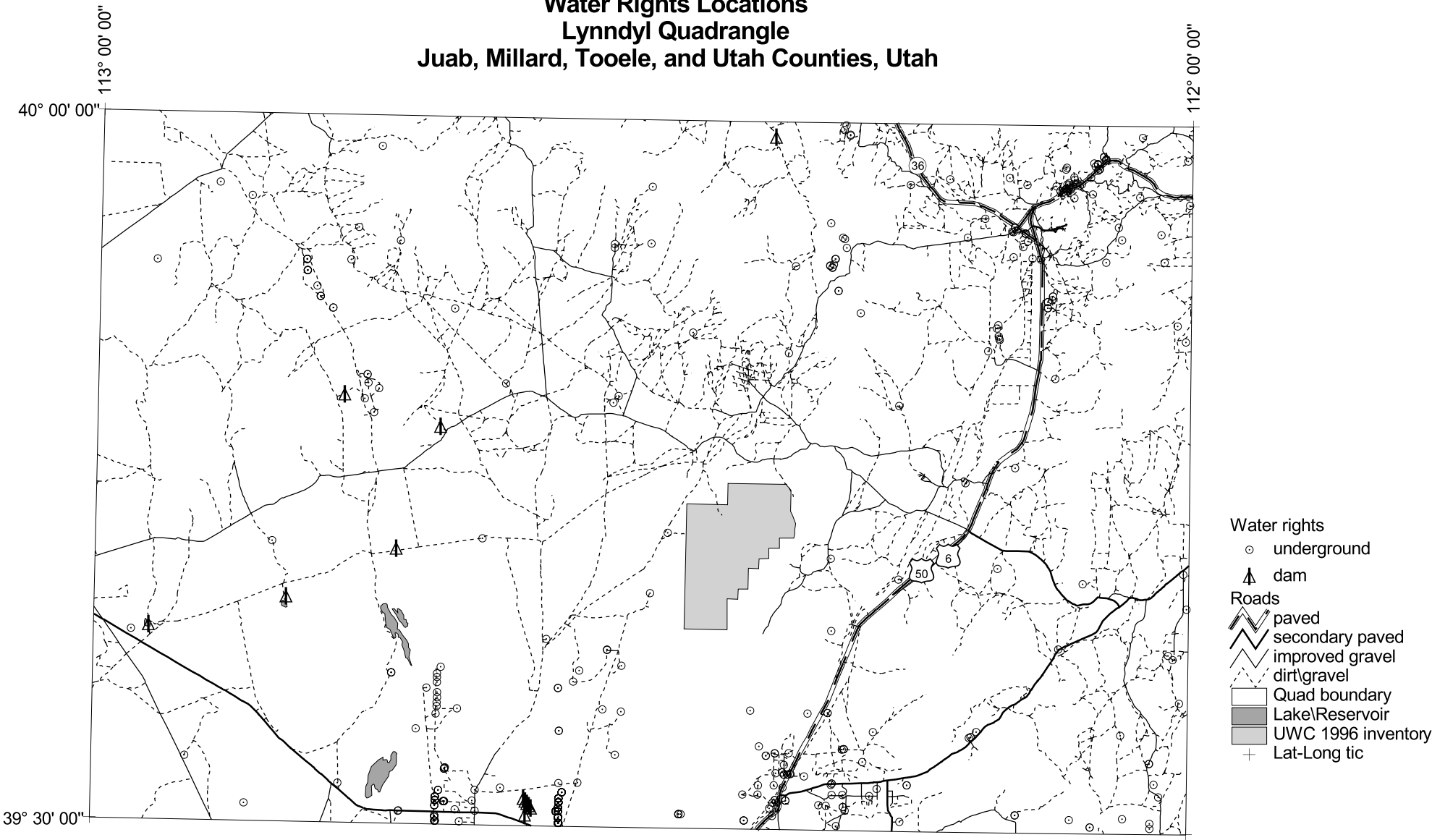


Land Ownership Lynndyl Quadrangle Juab, Millard, Tooele, and Utah Counties, Utah

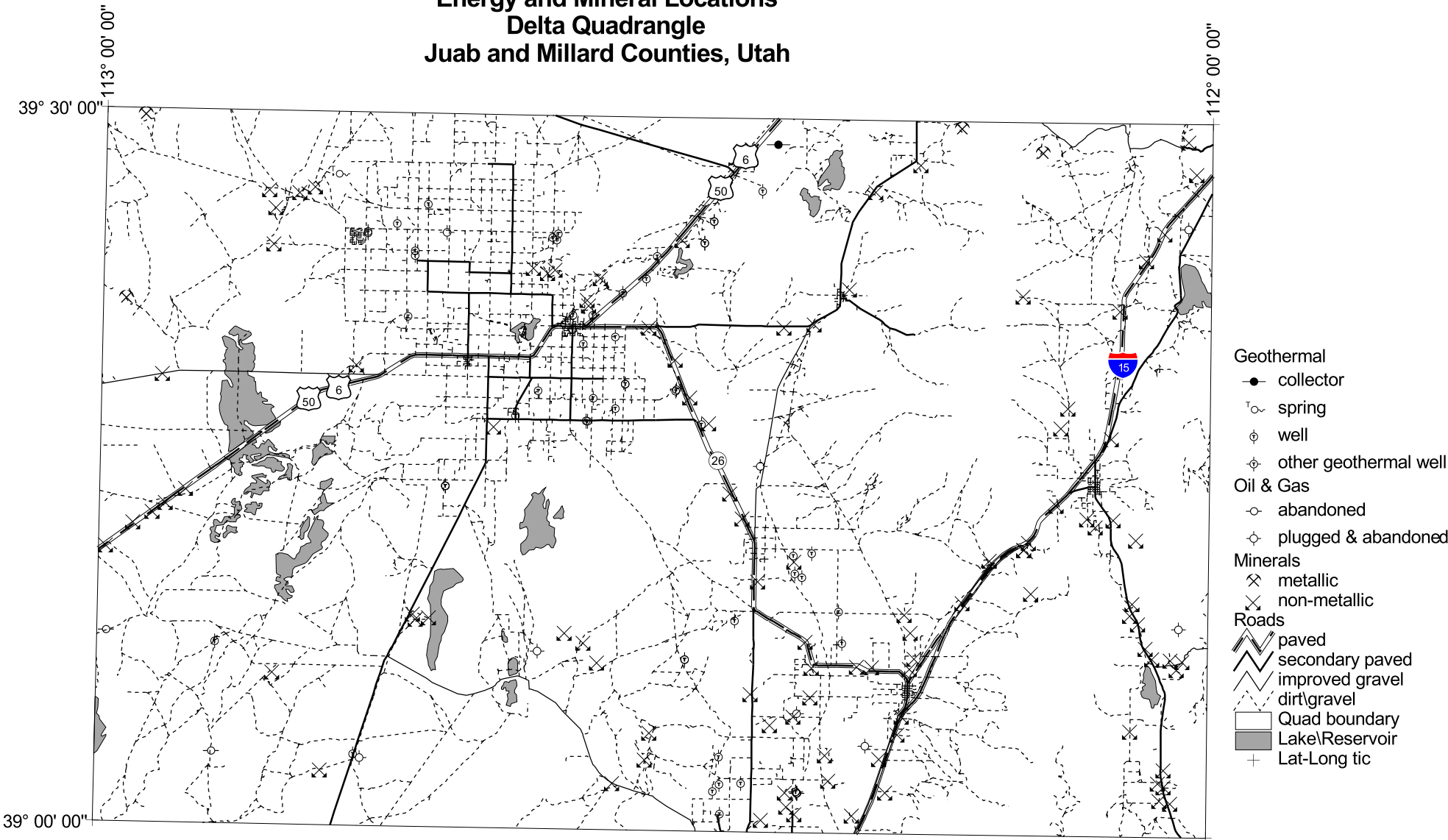


- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt\gravel
- Power plant**
- City/Town**
- UWC 1996 inventory**
- Land ownership**
- Land to USA
 - US Forest Service
 - BLM
 - State
 - Private
 - Bankhead Jones
 - Intermittent water
- Lat-Long tic**

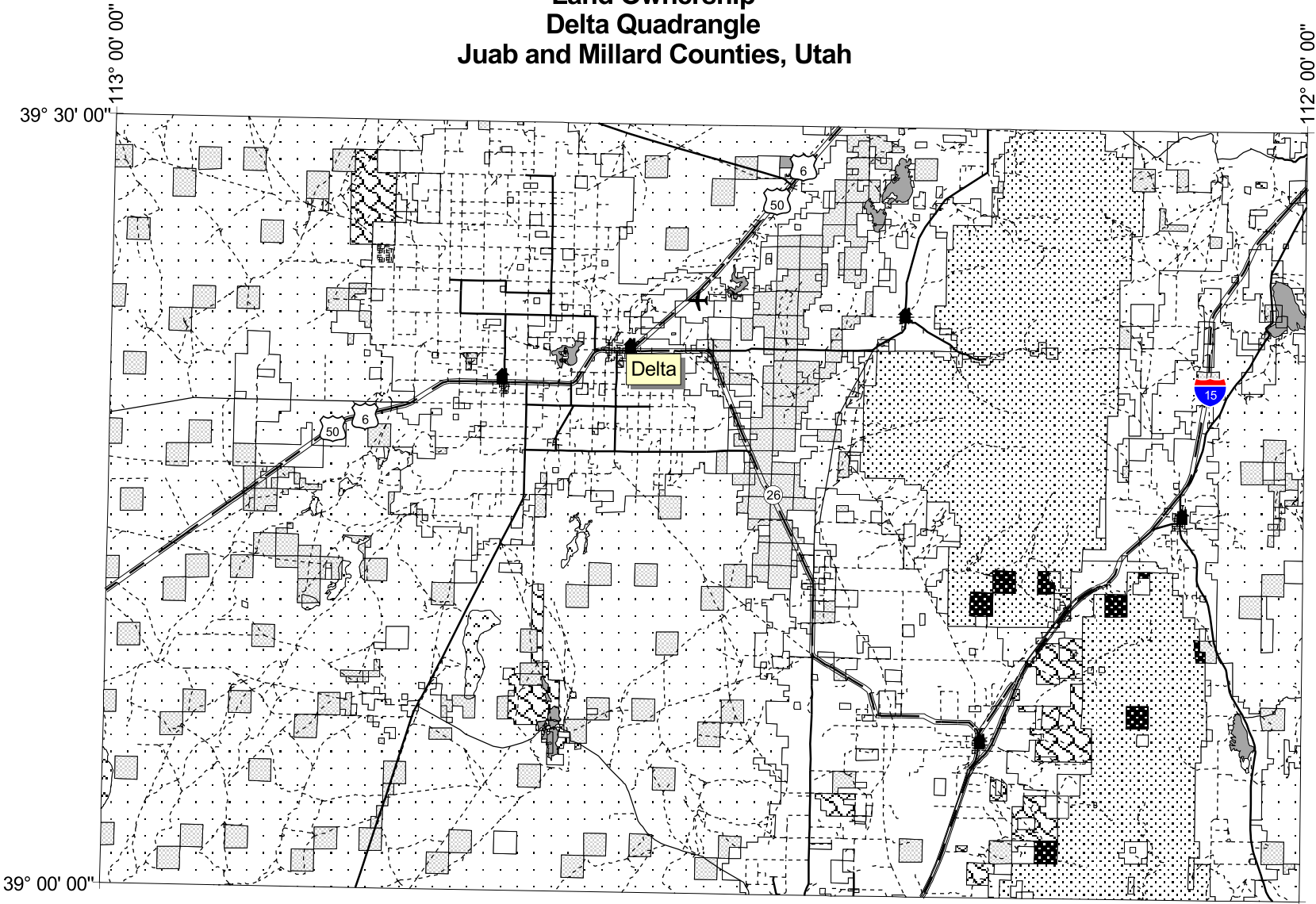
Water Rights Locations Lynndyl Quadrangle Juab, Millard, Tooele, and Utah Counties, Utah



Energy and Mineral Locations Delta Quadrangle Juab and Millard Counties, Utah



Land Ownership Delta Quadrangle Juab and Millard Counties, Utah



Roads

- paved
- secondary paved
- improved gravel
- dirt/gravel

Airport

City/Town

Land to USA

Land ownership

US Forest Service

BLM

State

Private

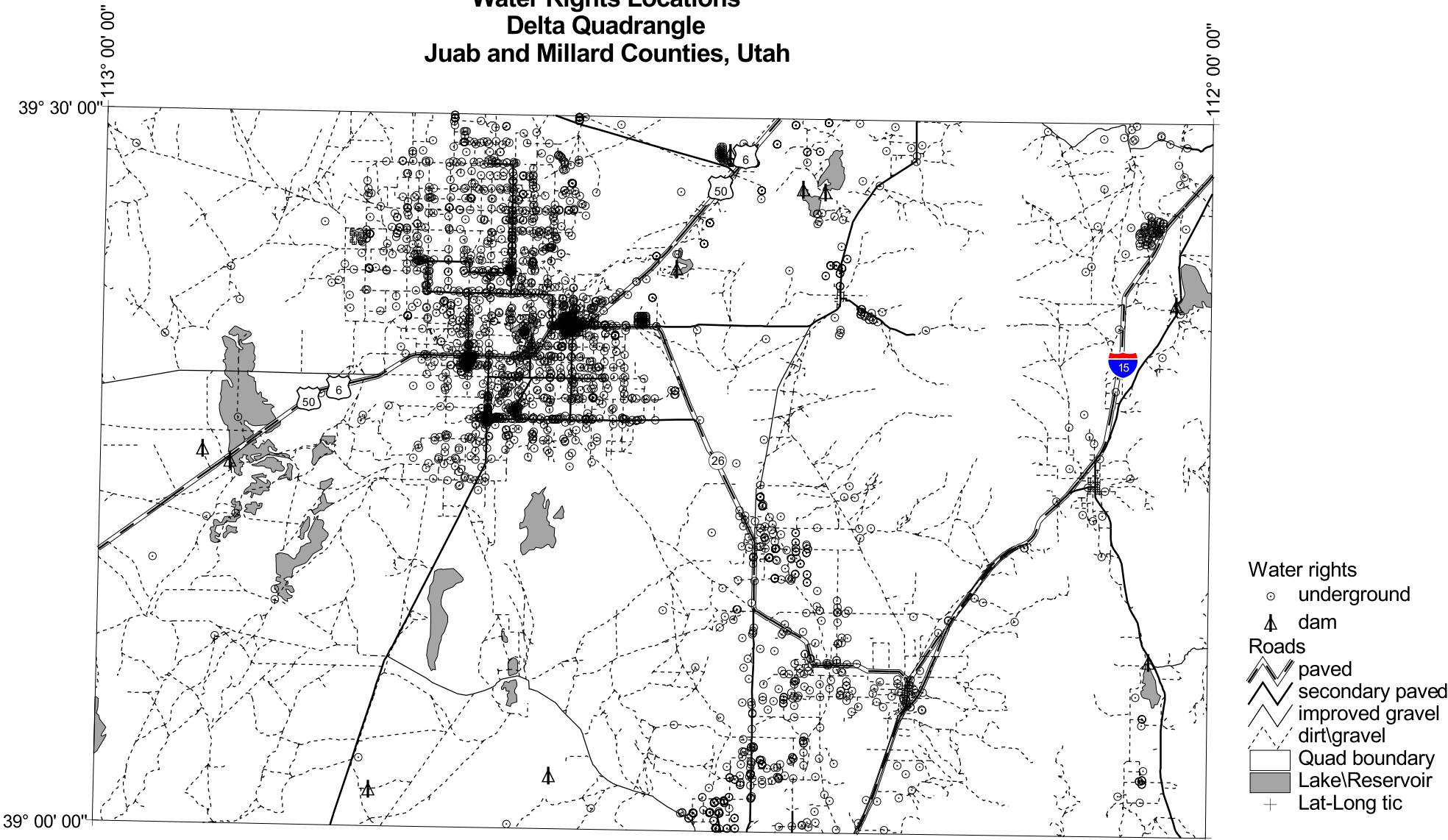
State Wildlife Refuge

Water

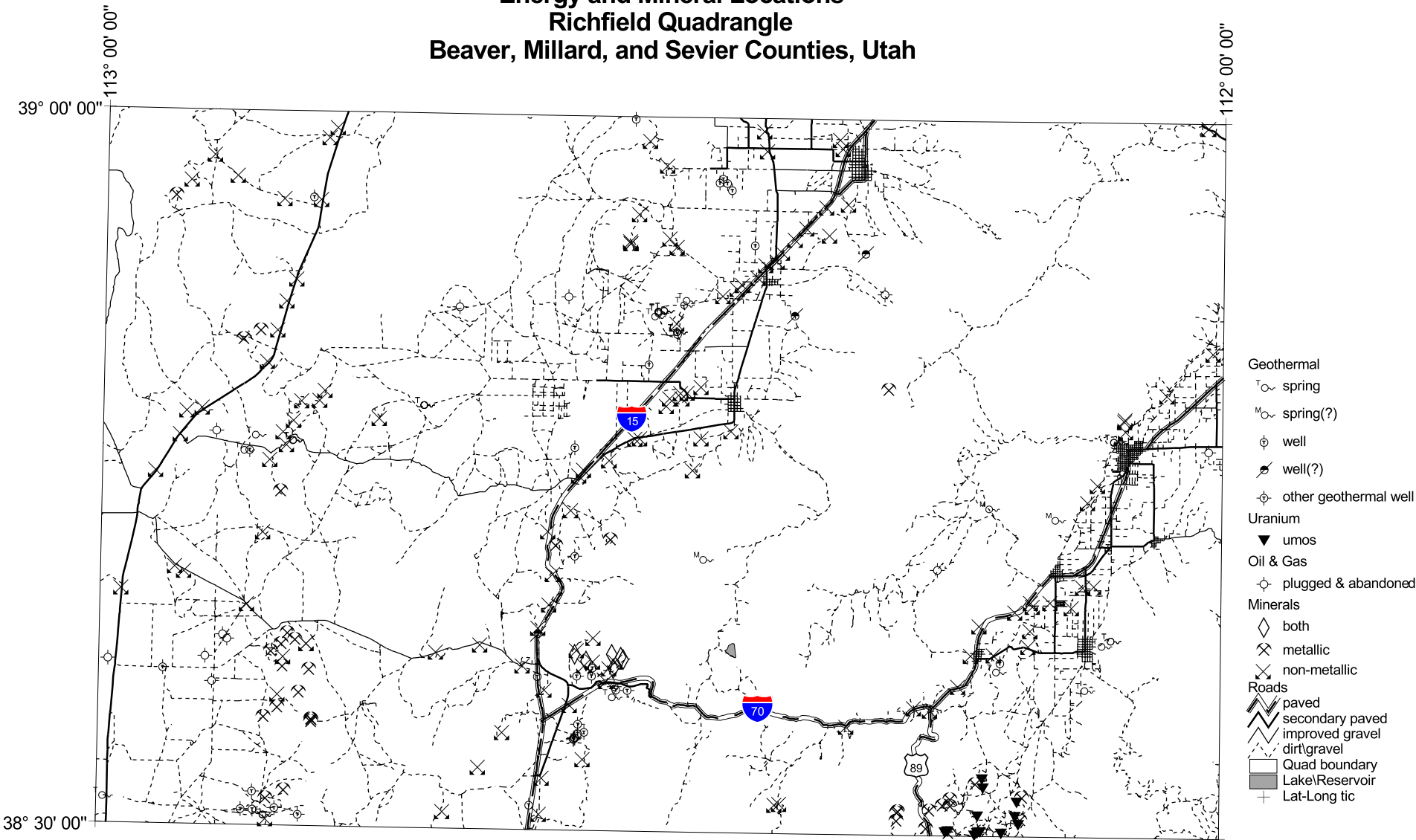
Intermittent water

Lat-Long tic

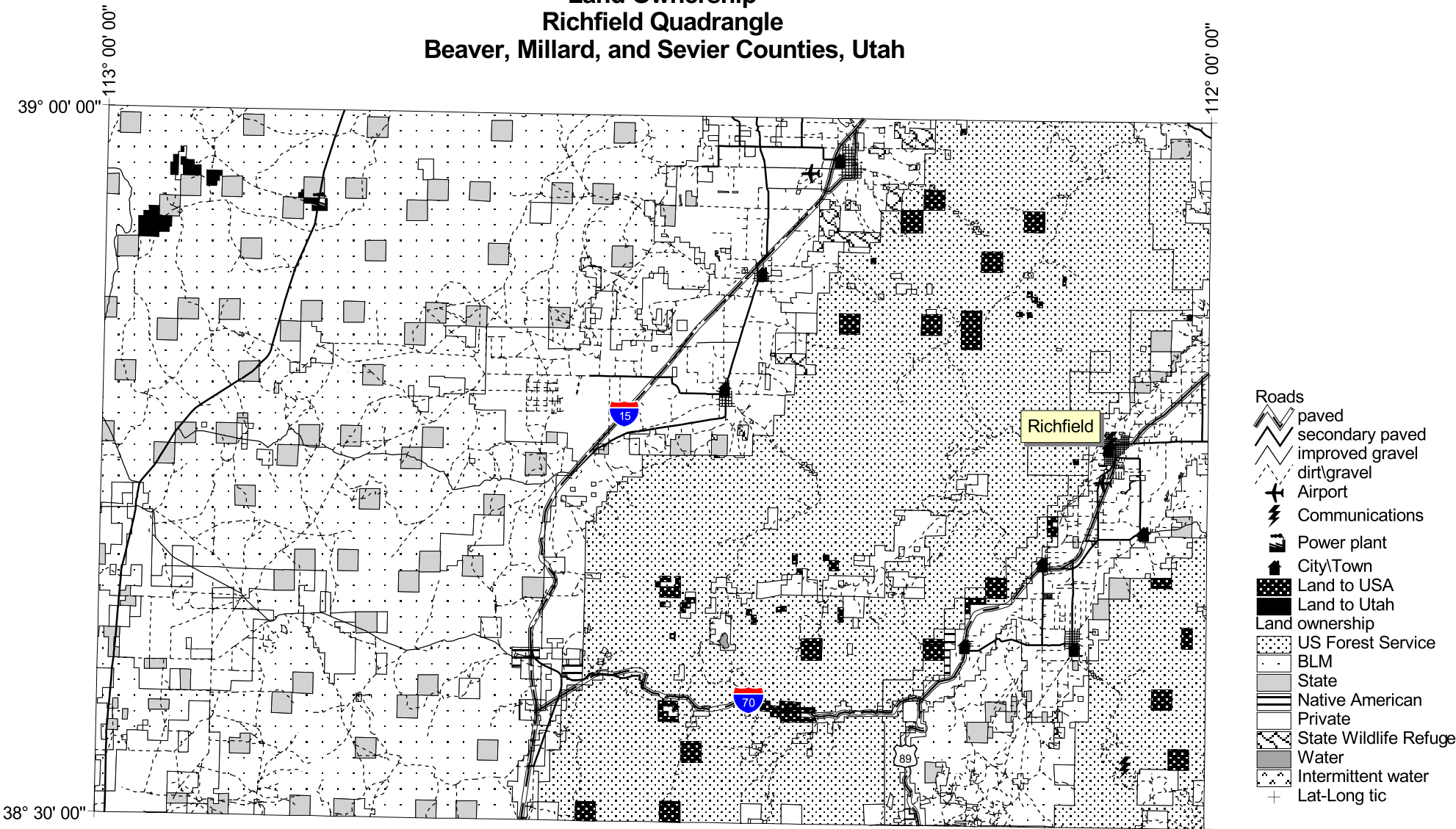
Water Rights Locations Delta Quadrangle Juab and Millard Counties, Utah



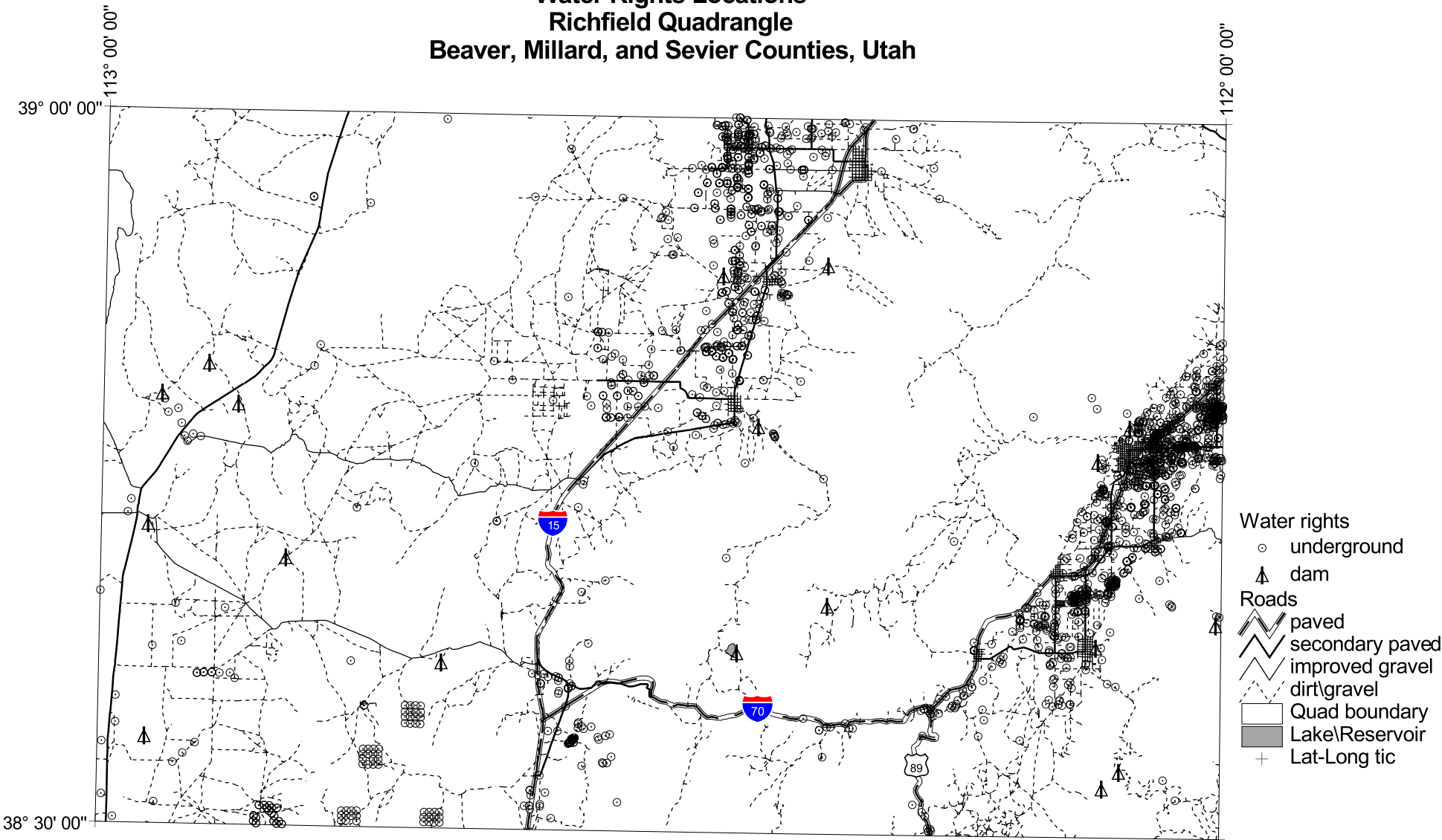
Energy and Mineral Locations Richfield Quadrangle Beaver, Millard, and Sevier Counties, Utah



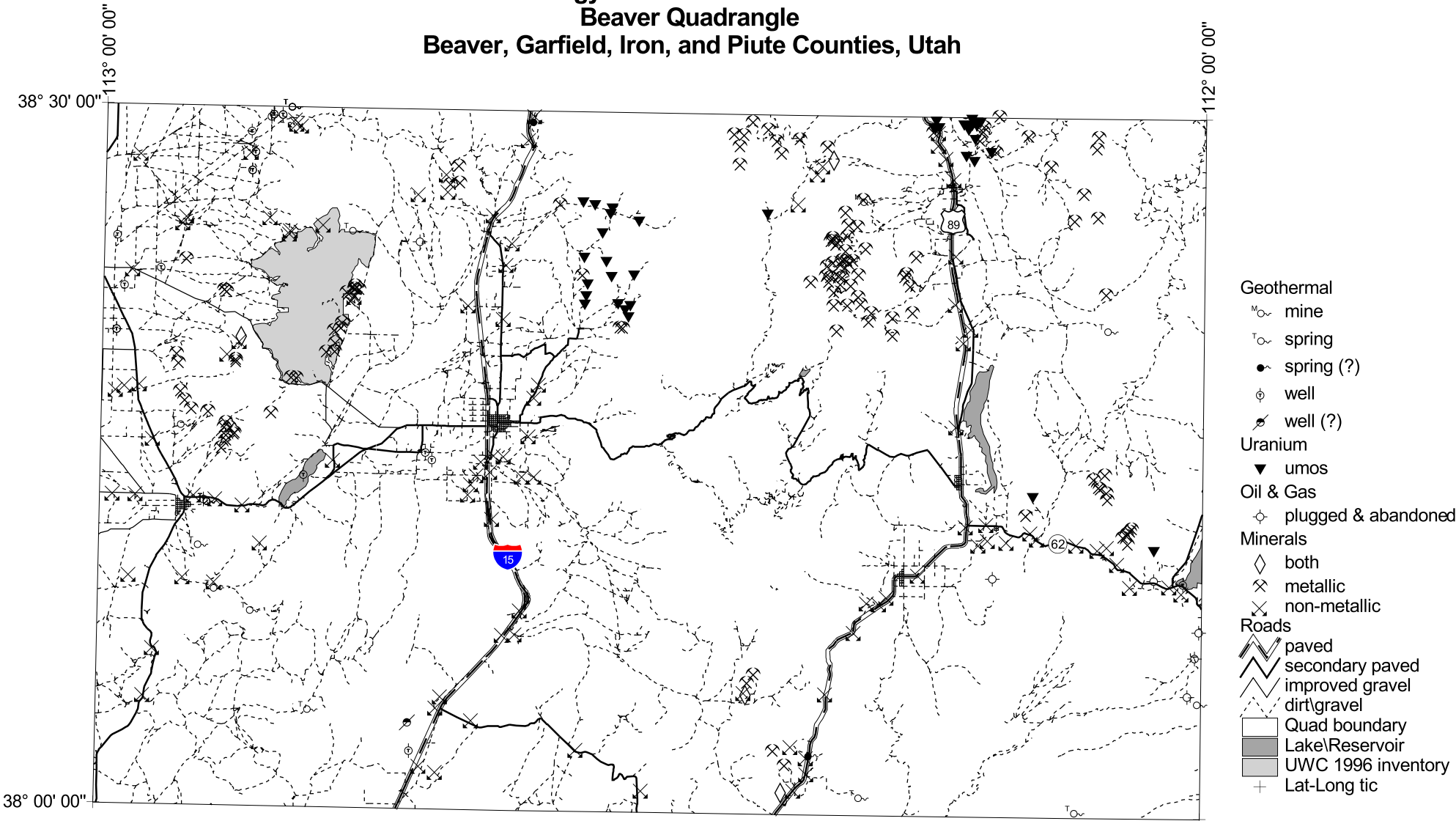
Land Ownership Richfield Quadrangle Beaver, Millard, and Sevier Counties, Utah



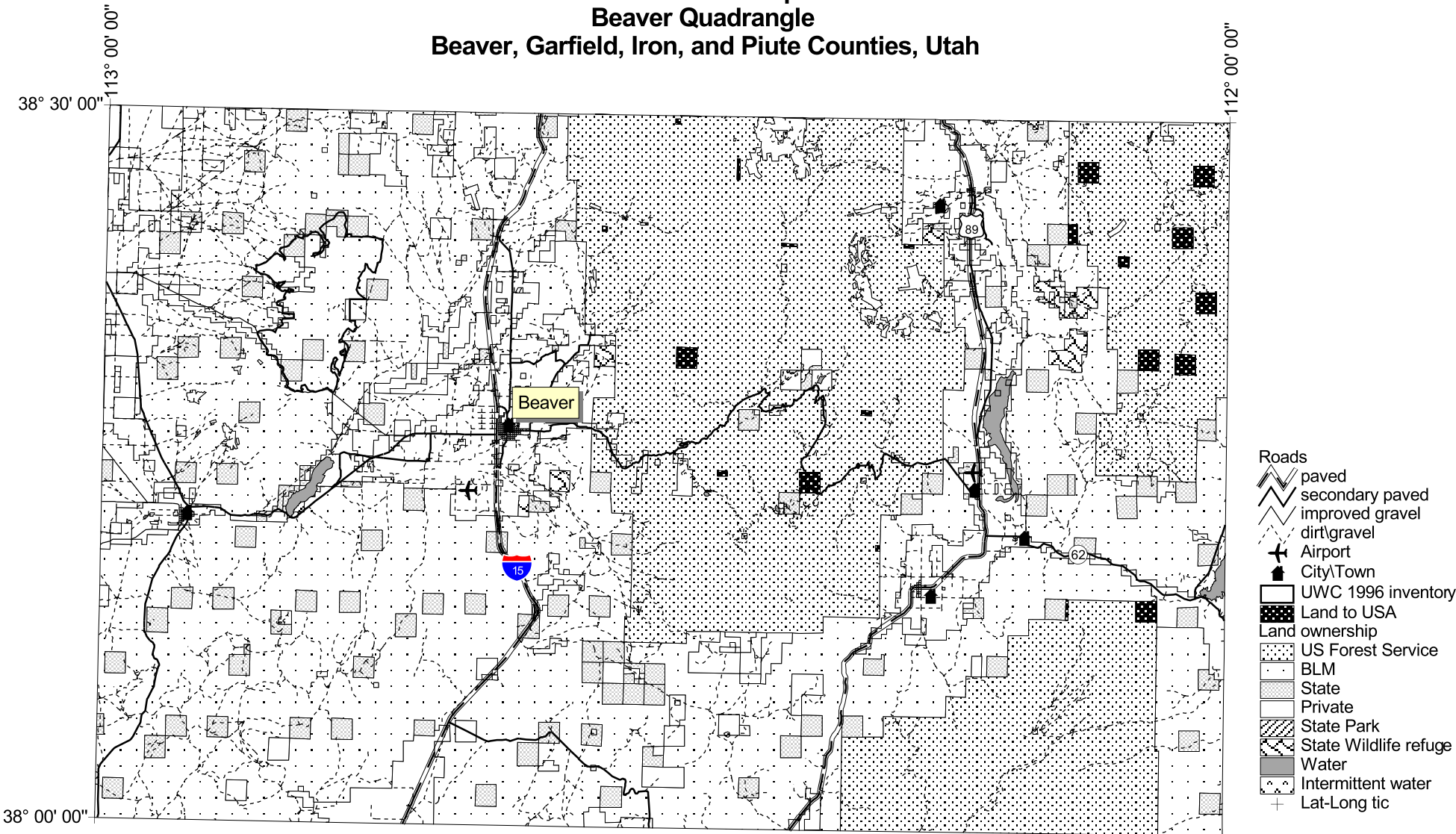
Water Rights Locations Richfield Quadrangle Beaver, Millard, and Sevier Counties, Utah



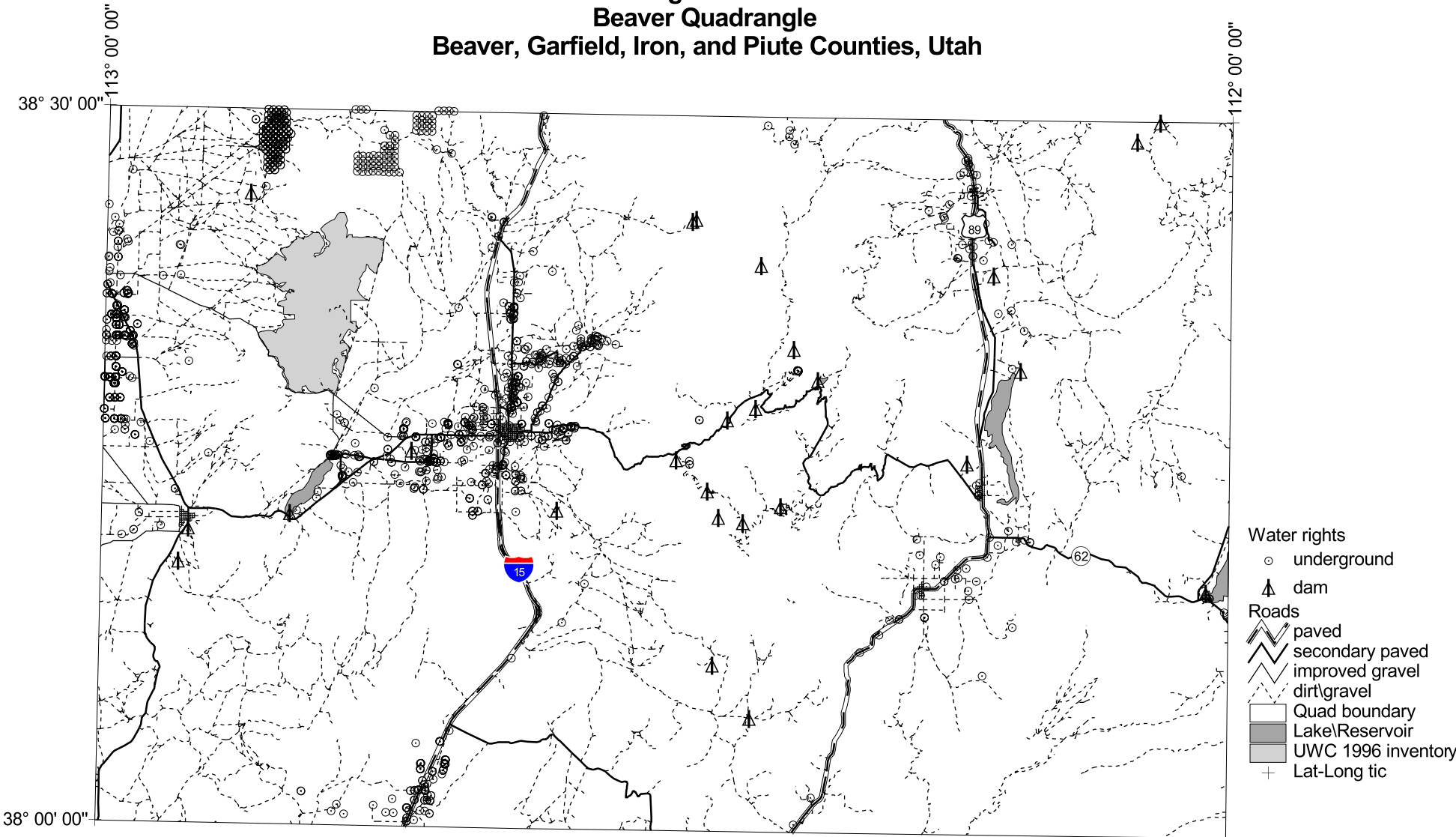
Energy and Mineral Locations Beaver Quadrangle Beaver, Garfield, Iron, and Piute Counties, Utah



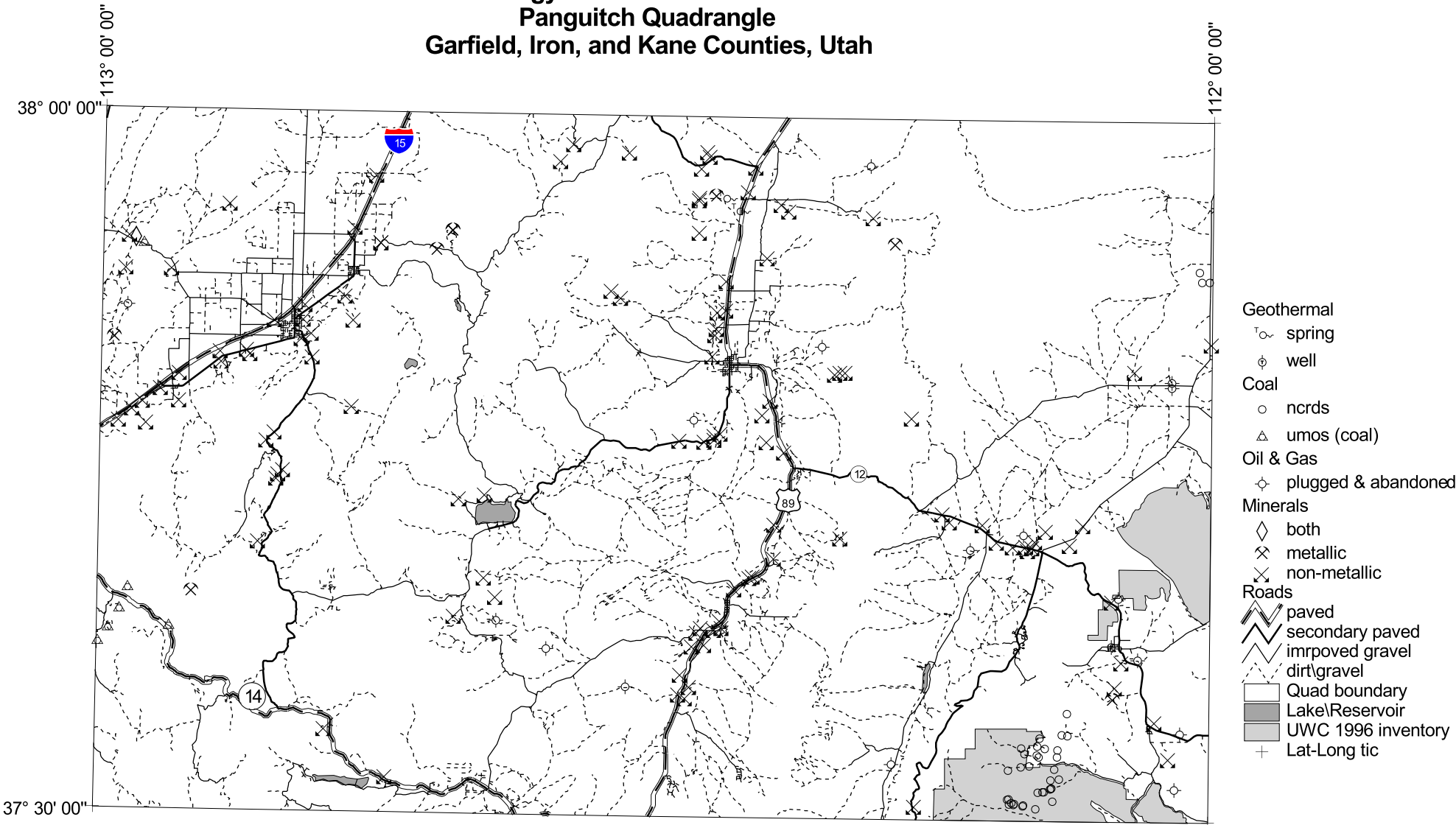
Land Ownership Beaver Quadrangle Beaver, Garfield, Iron, and Piute Counties, Utah



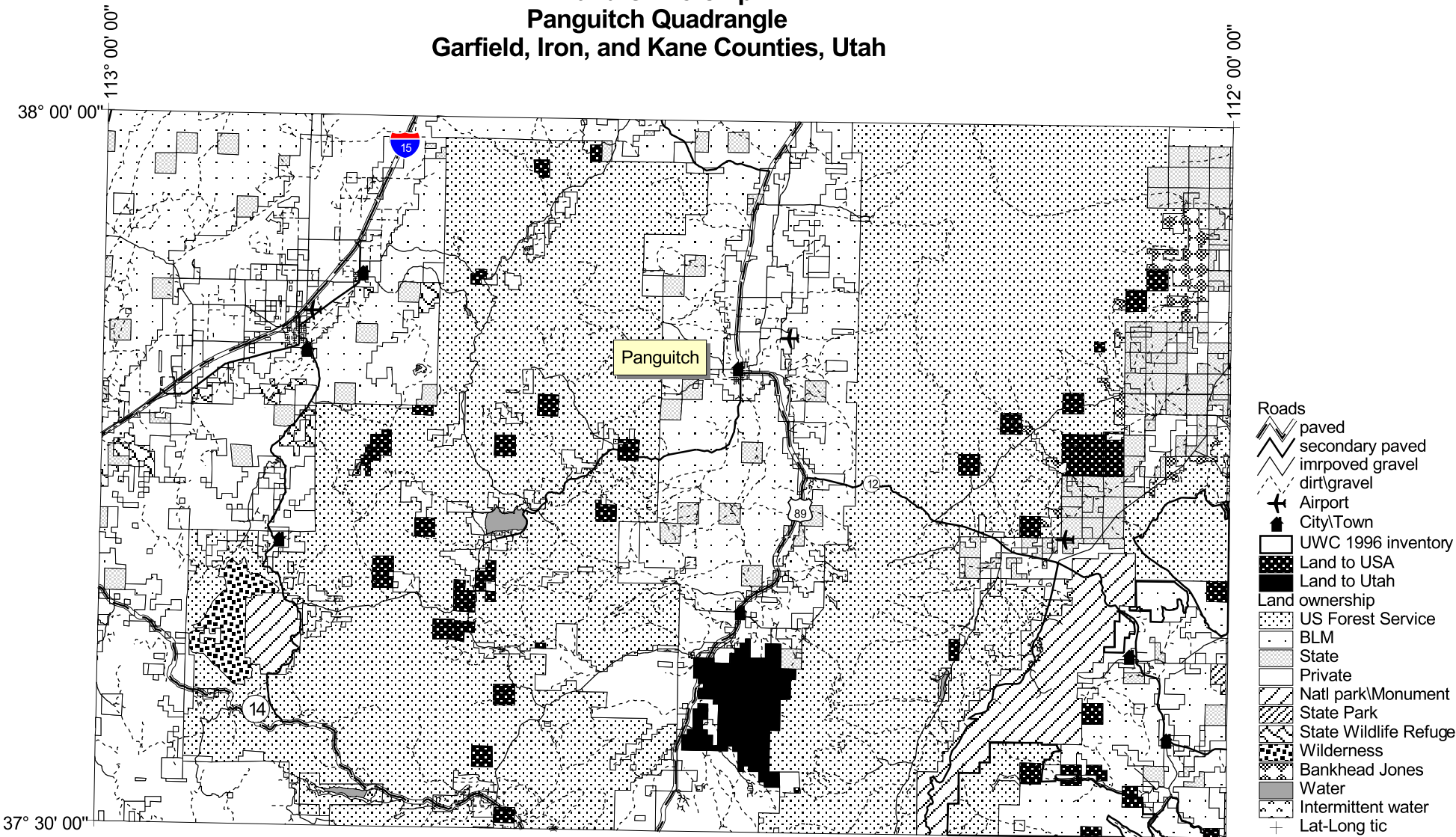
Water Rights Locations Beaver Quadrangle Beaver, Garfield, Iron, and Piute Counties, Utah



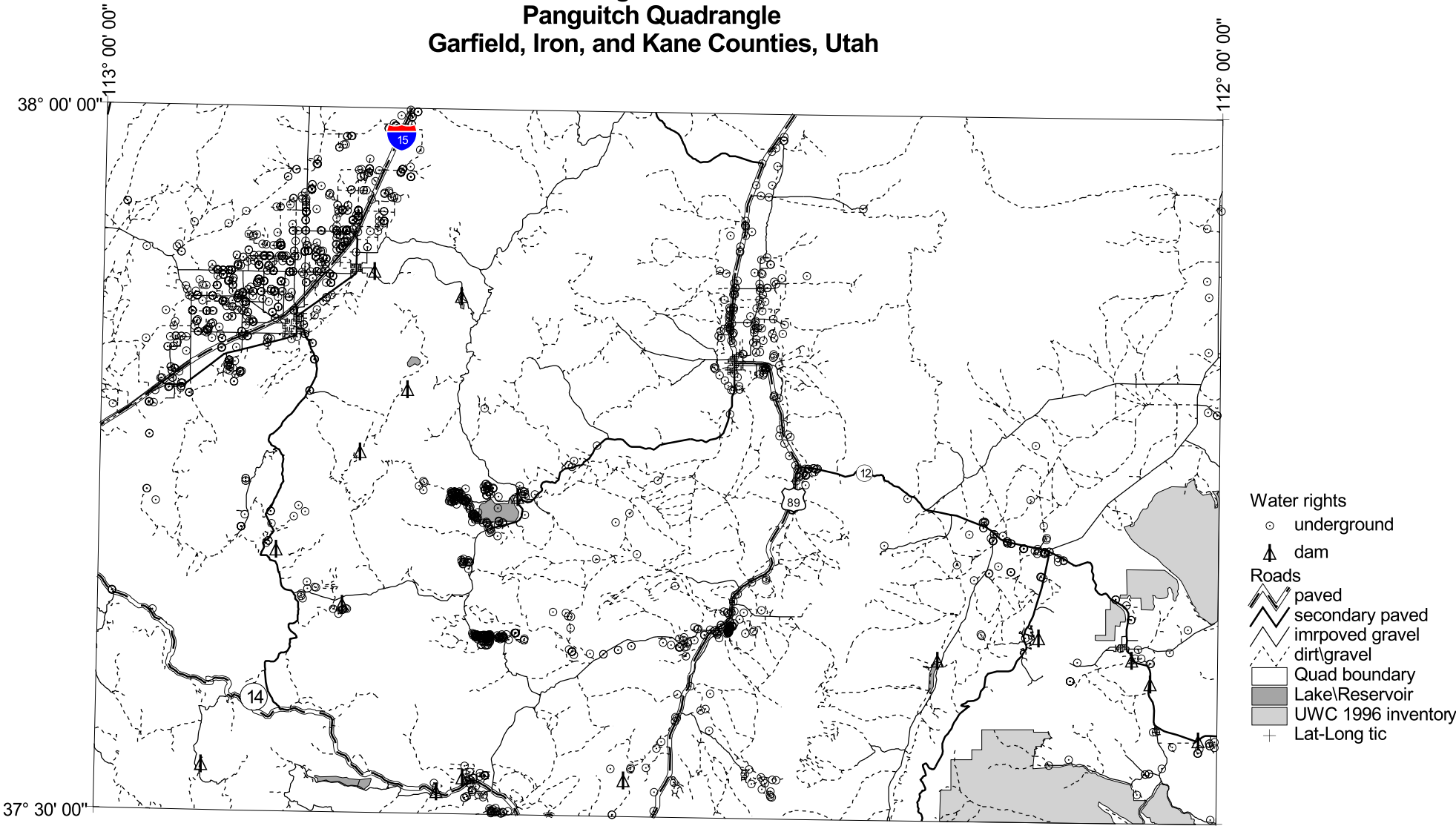
Energy and Mineral Locations Panguitch Quadrangle Garfield, Iron, and Kane Counties, Utah



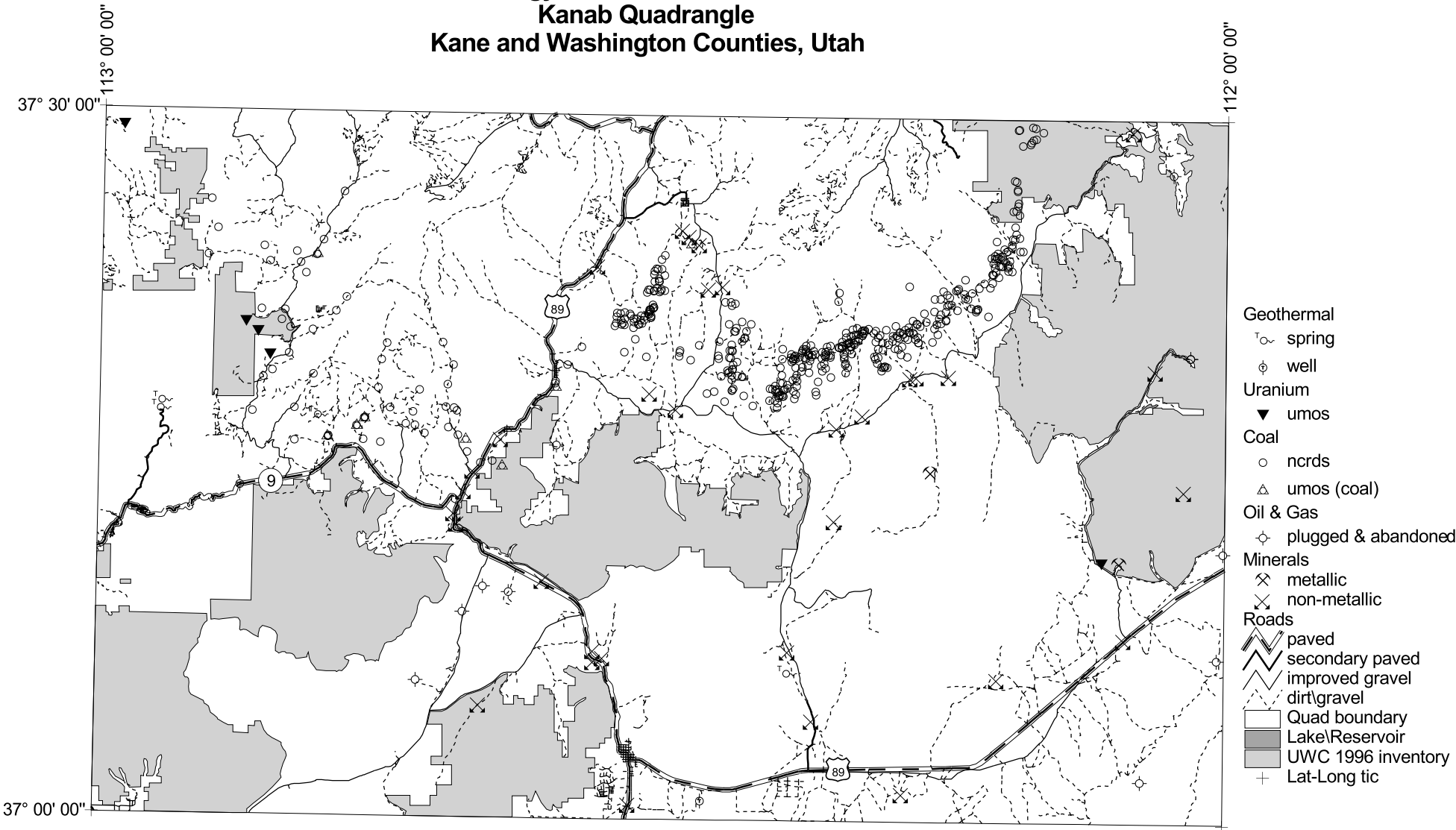
Land Ownership Panguitch Quadrangle Garfield, Iron, and Kane Counties, Utah



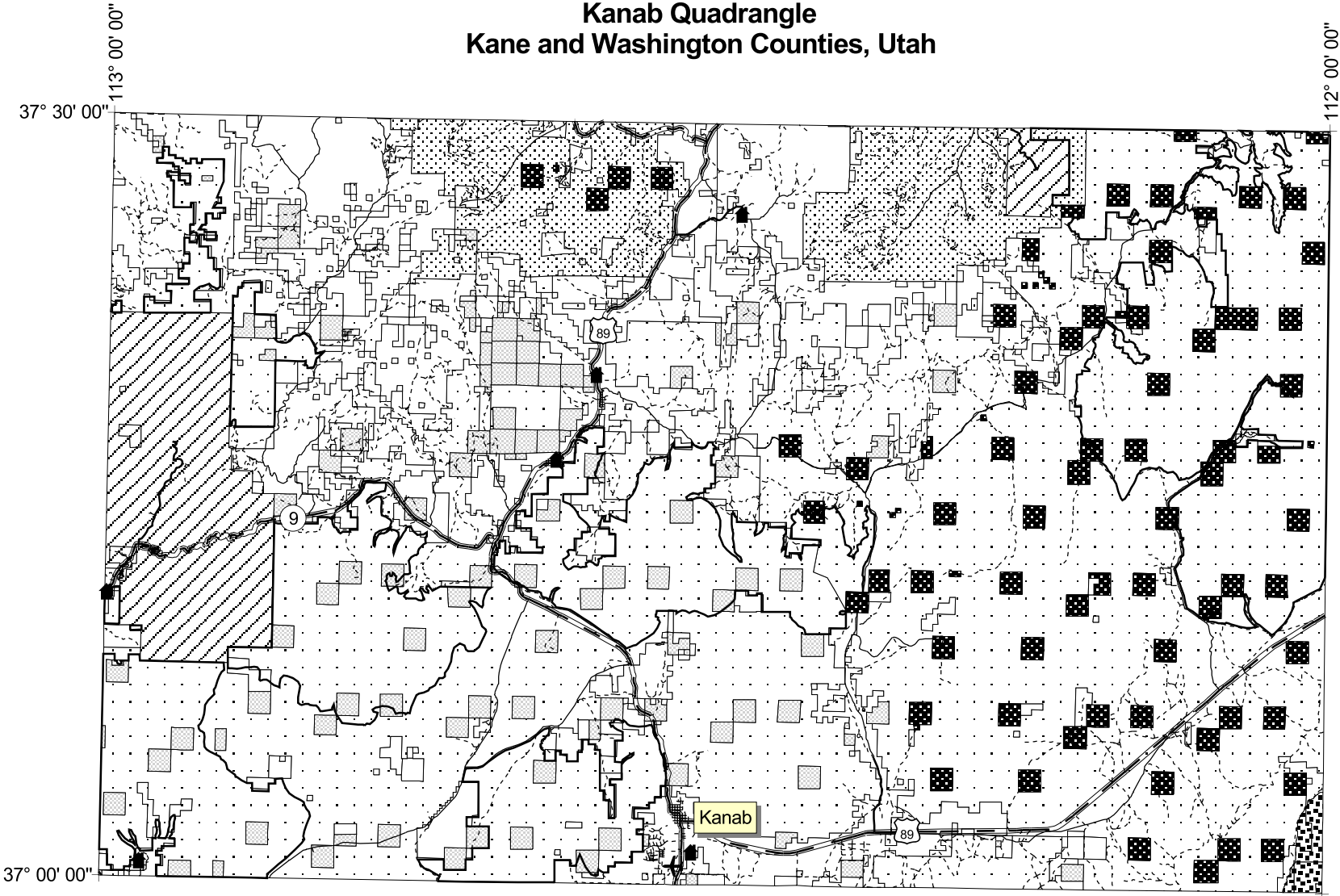
Water Rights Locations Panguitch Quadrangle Garfield, Iron, and Kane Counties, Utah



Energy and Mineral Locations Kanab Quadrangle Kane and Washington Counties, Utah

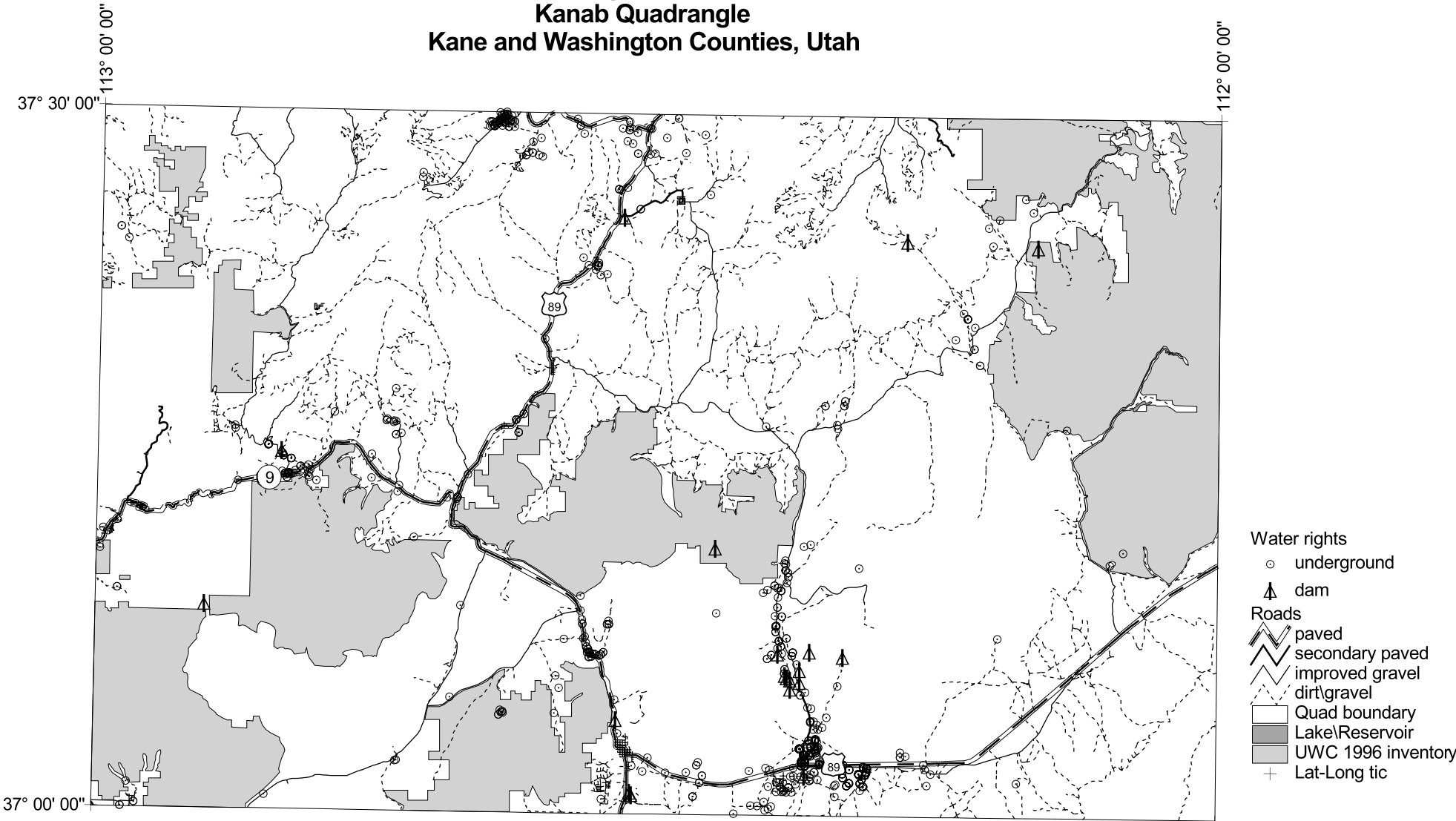


Land Ownership Kanab Quadrangle Kane and Washington Counties, Utah

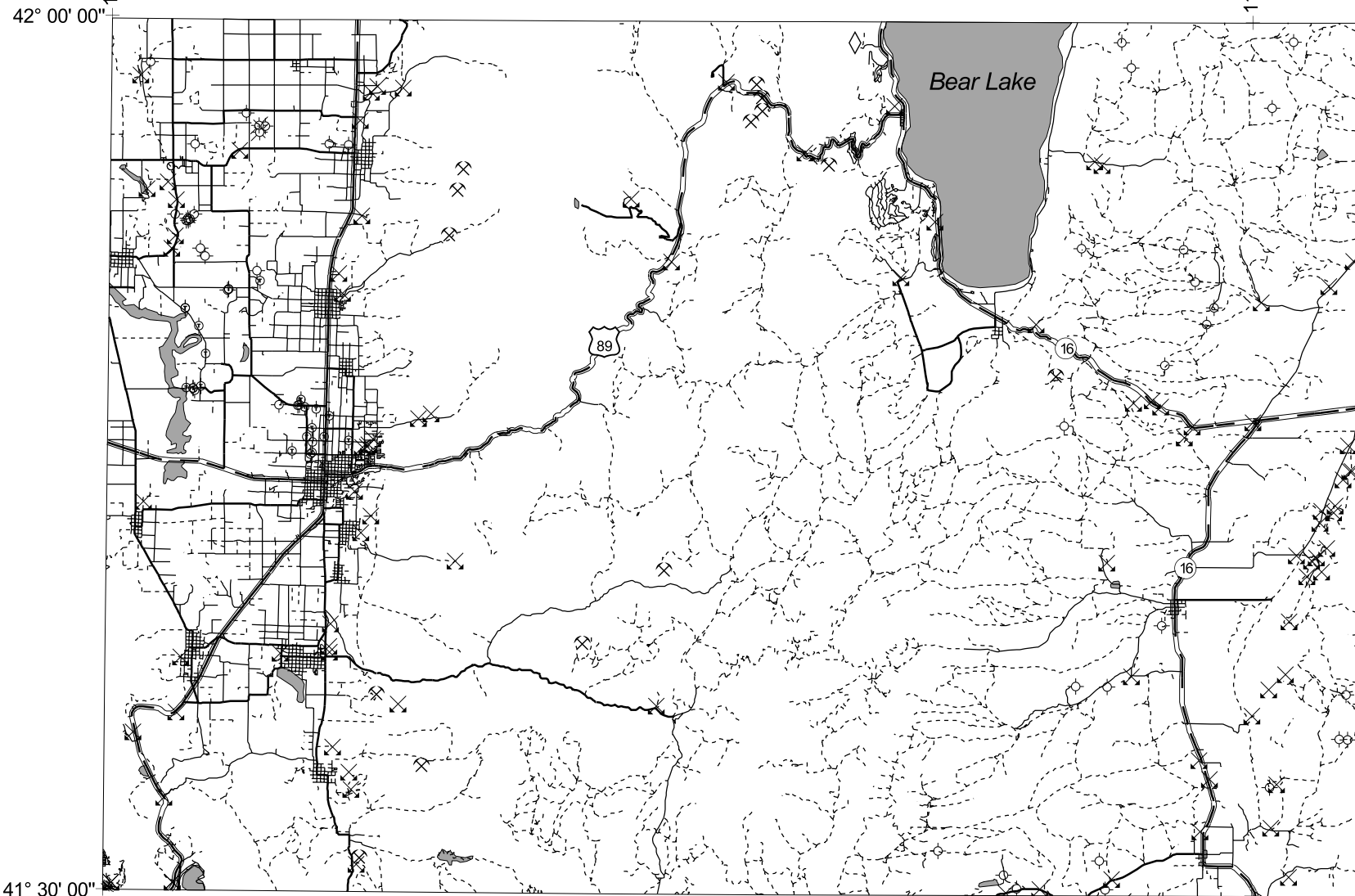


- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Other Features**
- Airport
 - City/Town
 - UWC 1996 inventory
 - Land to USA
- Land ownership**
- US Forest Service
 - BLM
 - State
 - Private
 - Natl Park/Monument
 - State Park
 - Wilderness
 - Water
 - Intermittent water
 - Lat-Long tic

Water Rights Locations Kanab Quadrangle Kane and Washington Counties, Utah



Energy and Mineral Locations Logan Quadrangle Box Elder, Cache, and Rich Counties, Utah



Geothermal

○ spring

⊕ well

Oil & Gas

⊗ shut in gas well

⊙ plugged & abandoned

Minerals

◇ both

⊗ metallic

⊗ non-metallic

Roads

— paved

— secondary paved

— improved gravel

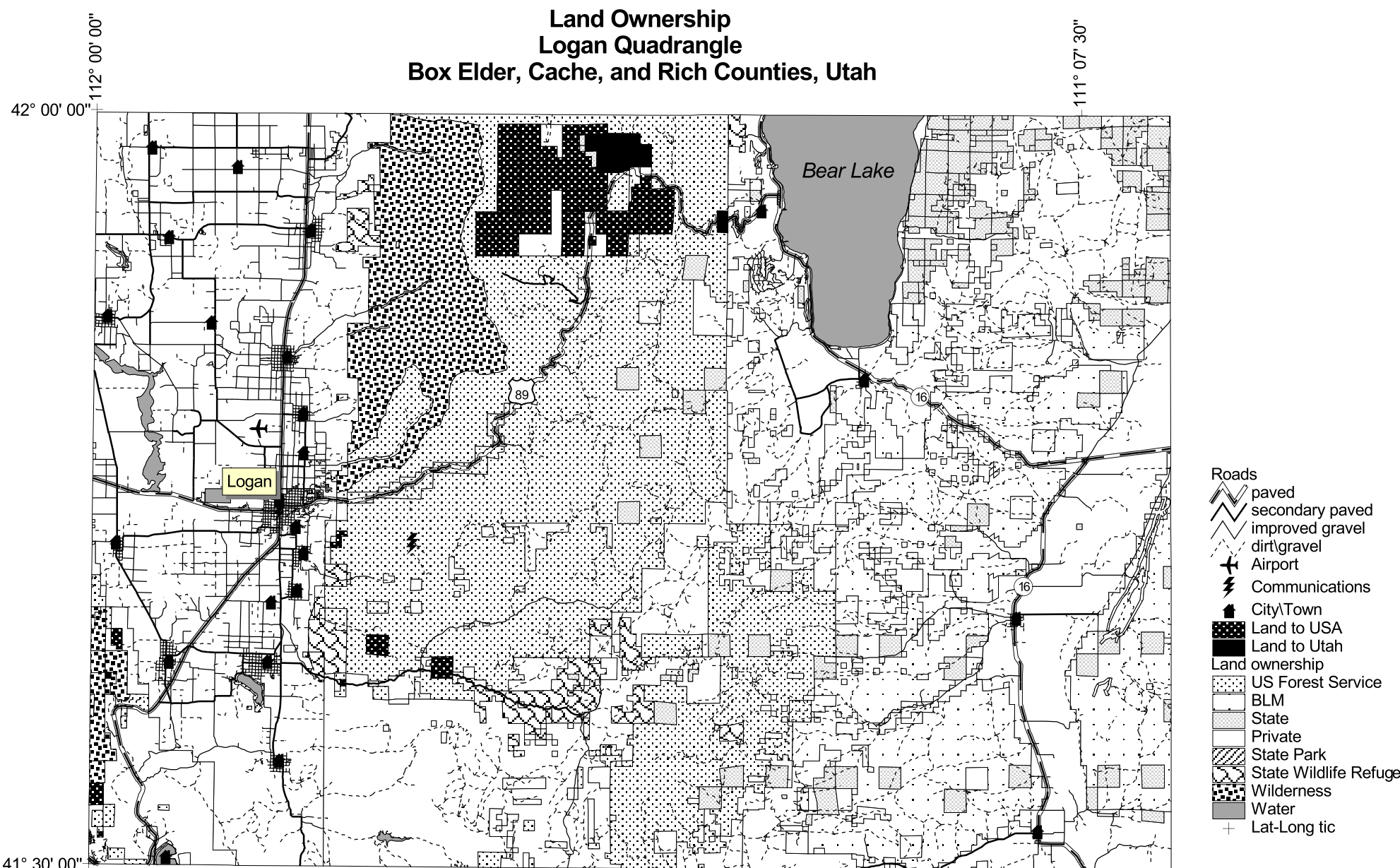
— dirt\gravel

□ Quad boundary

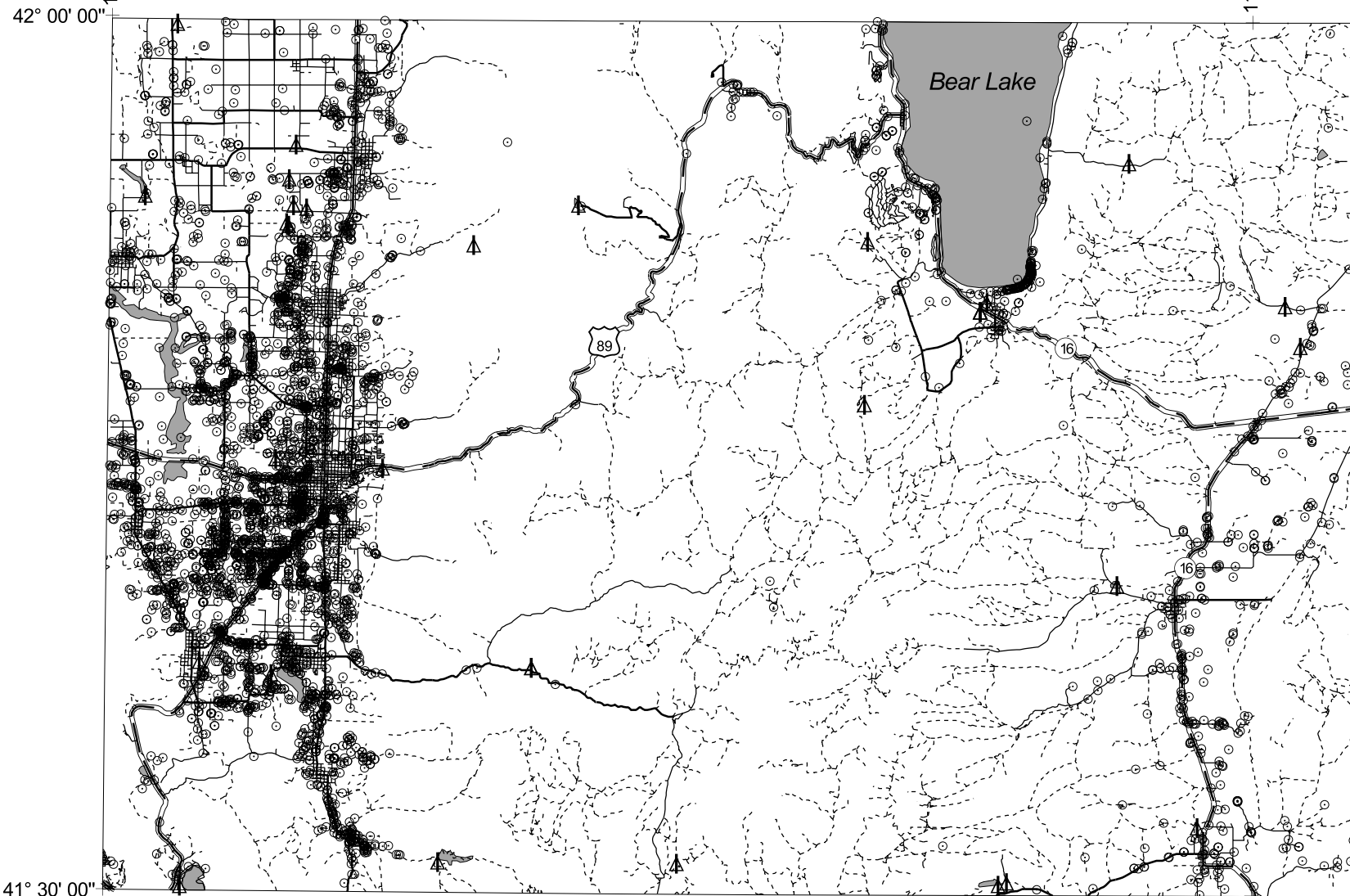
■ Lake\Reservoir

⊕ Lat-Long tic

Land Ownership Logan Quadrangle Box Elder, Cache, and Rich Counties, Utah



Water Rights Locations Logan Quadrangle Box Elder, Cache, and Rich Counties, Utah



Water rights

○ underground

▲ dam

Roads

▬ paved

▬ secondary paved

▬ improved gravel

▬ dirt/gravel

□ Quad boundary

■ Lake/Reservoir

+ Lat-Long tic

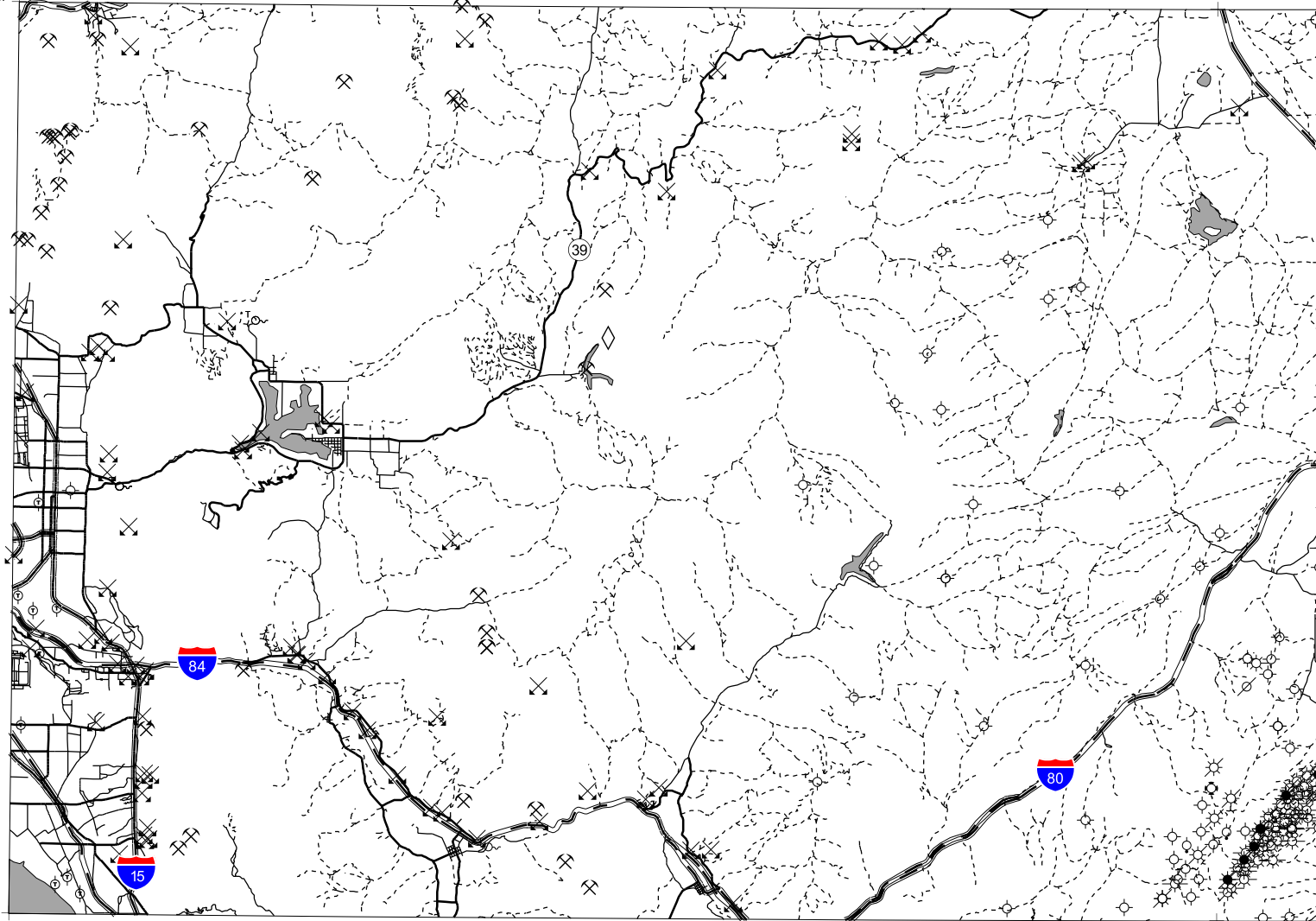
Energy and Mineral Locations Ogden Quadrangle Box Elder, Cache, Morgan, Rich, Summit, and Weber Counties, Utah

41° 30' 00"

112° 00' 00"

111° 07' 30"

41° 00' 00"



Geothermal

○ spring

⊙ well

Oil & Gas

⊙ drilling

⊙ gas injection well

⊙ shut in gas well

⊙ plugged & abandoned

⊙ plugged gas well

⊙ temporarily abandoned

⊙ water disposal well

Minerals

◇ both

⊗ metallic

⊗ non-metallic

Roads

— paved

— secondary paved

— improved gravel

— dirt/gravel

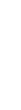
□ Quad boundary

■ Lake/Reservoir

⊕ Lat-Long tic

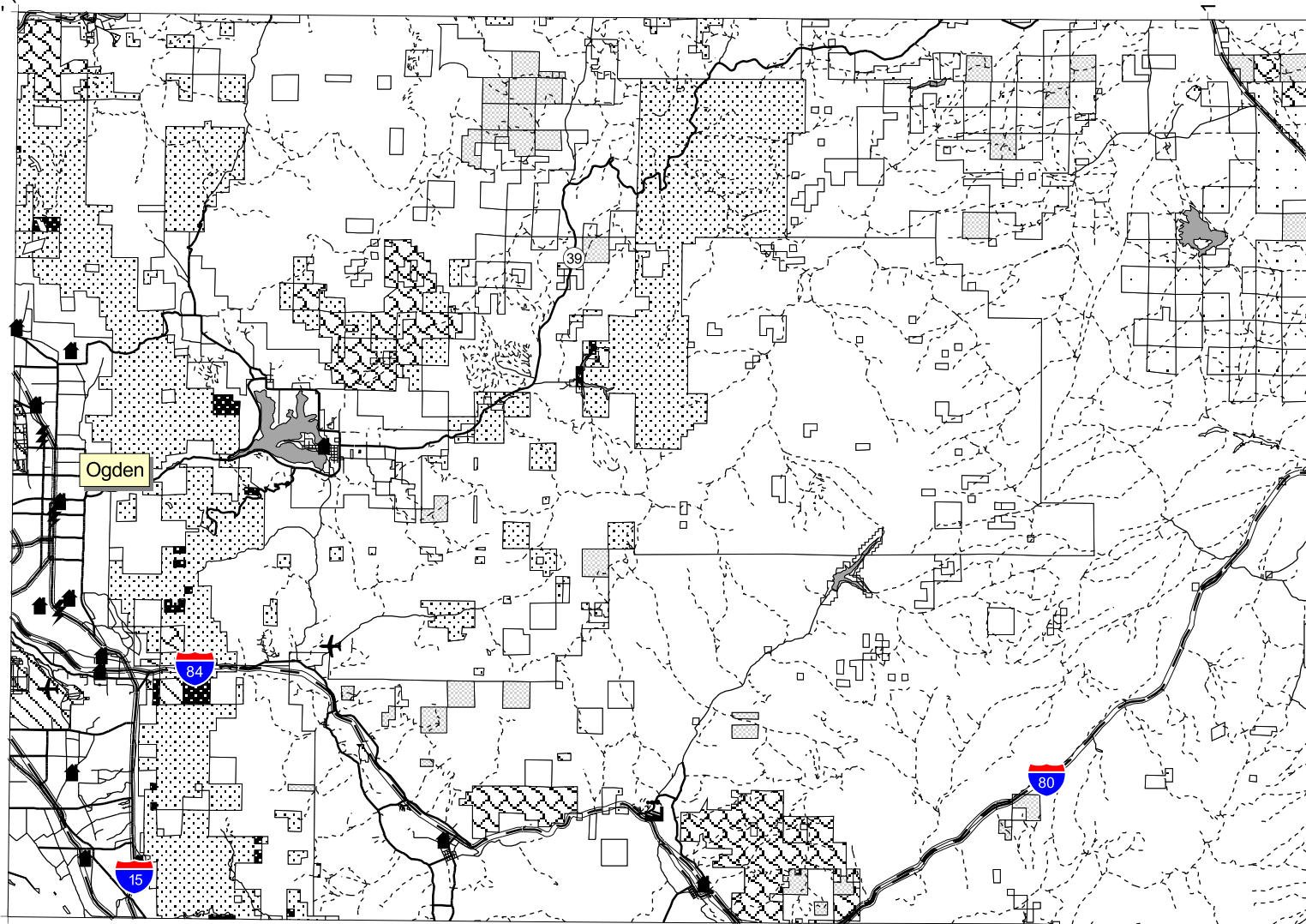


0 5 10 15 20 Miles



Land Ownership Ogden Quadrangle Box Elder, Cache, Morgan, Rich, Summit, and Weber Counties, Utah

41° 30' 00"



111° 07' 30"

- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Airport**
- Communications**
- Power plant**
- City/Town**
- Land ownership**
- US Forest Service
 - BLM
 - State
 - Private
 - Military
 - State Wildlife Refuge
 - Water
 - Intermittent water
 - Lat-Long tic

41° 00' 00"

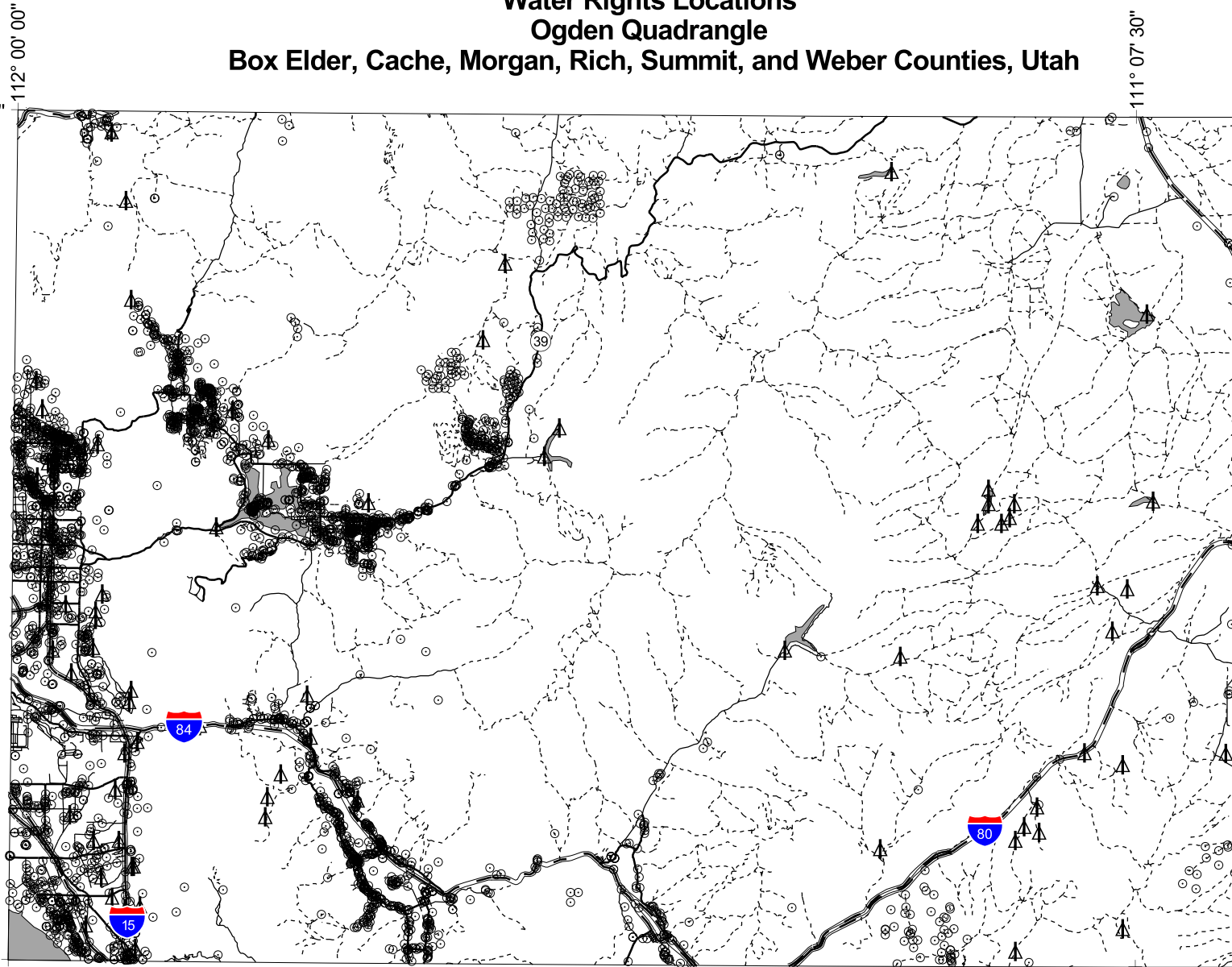


0 5 10 15 20 Miles



Water Rights Locations Ogden Quadrangle Box Elder, Cache, Morgan, Rich, Summit, and Weber Counties, Utah

41° 30' 00"



Water rights

- underground
- ▲ dam

Roads

- paved
- secondary paved
- improved gravel
- dirt/gravel
- Quad boundary
- Lake/Reservoir
- + Lat-Long tic

41° 00' 00"

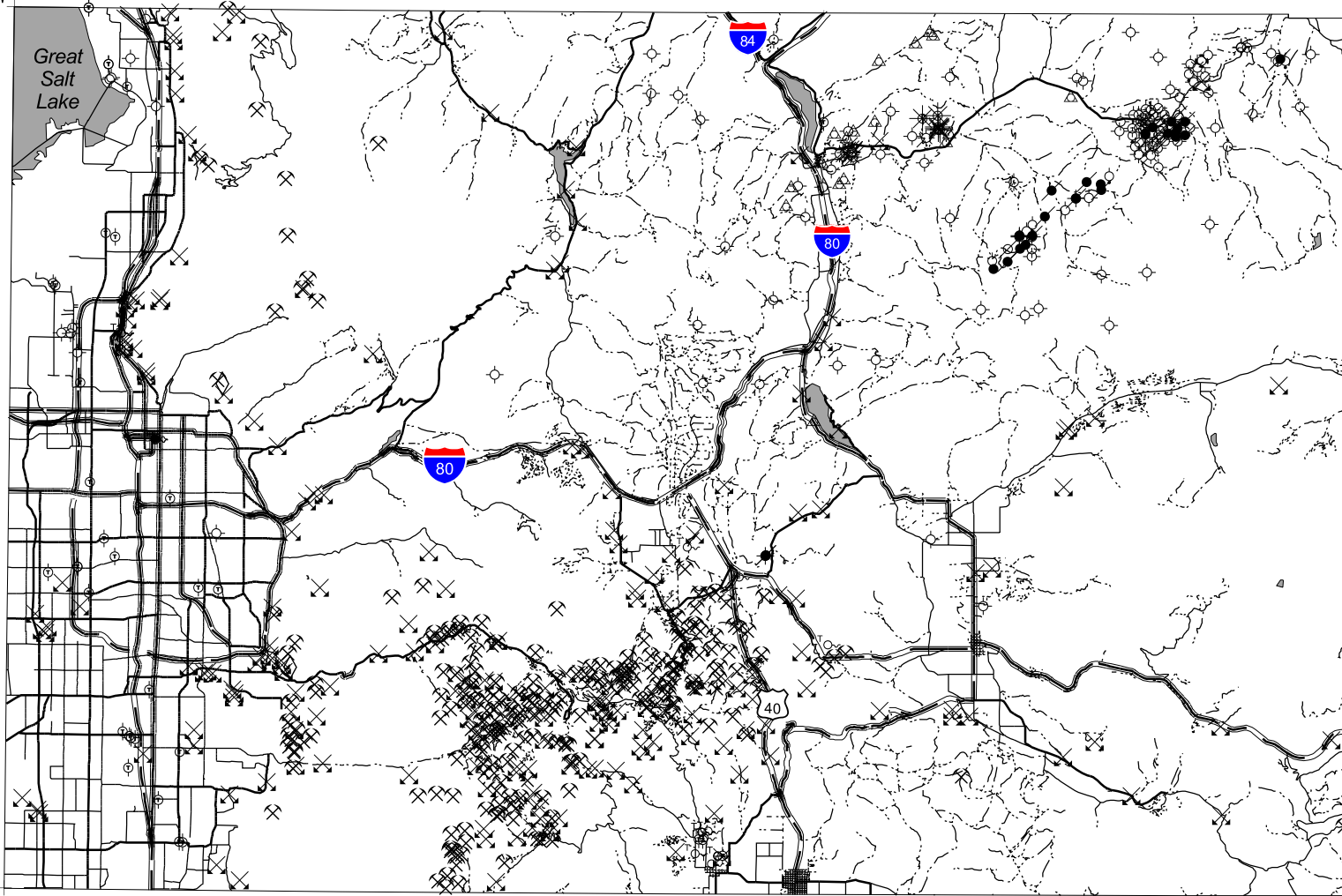
Energy and Mineral Locations Salt Lake City Quadrangle Davis, Morgan, Salt Lake, Summit, Utah, and Wasatch Counties, Utah

41° 00' 00"

112° 00' 00"

111° 00' 00"

40° 30' 00"



Geothermal

- spring
- spring (?)
- ⊕ well
- ⊕ other geothermal well

Coal

- △ umos

Oil & Gas

- ⊕ drilling
- ⊗ gas injection well
- ⊗ monitor well
- shut in oil well
- ⊕ plugged & abandoned
- ⊗ plugged gas well
- oil well
- ⊗ temporarily abandoned
- ⊕ water disposal well

Minerals

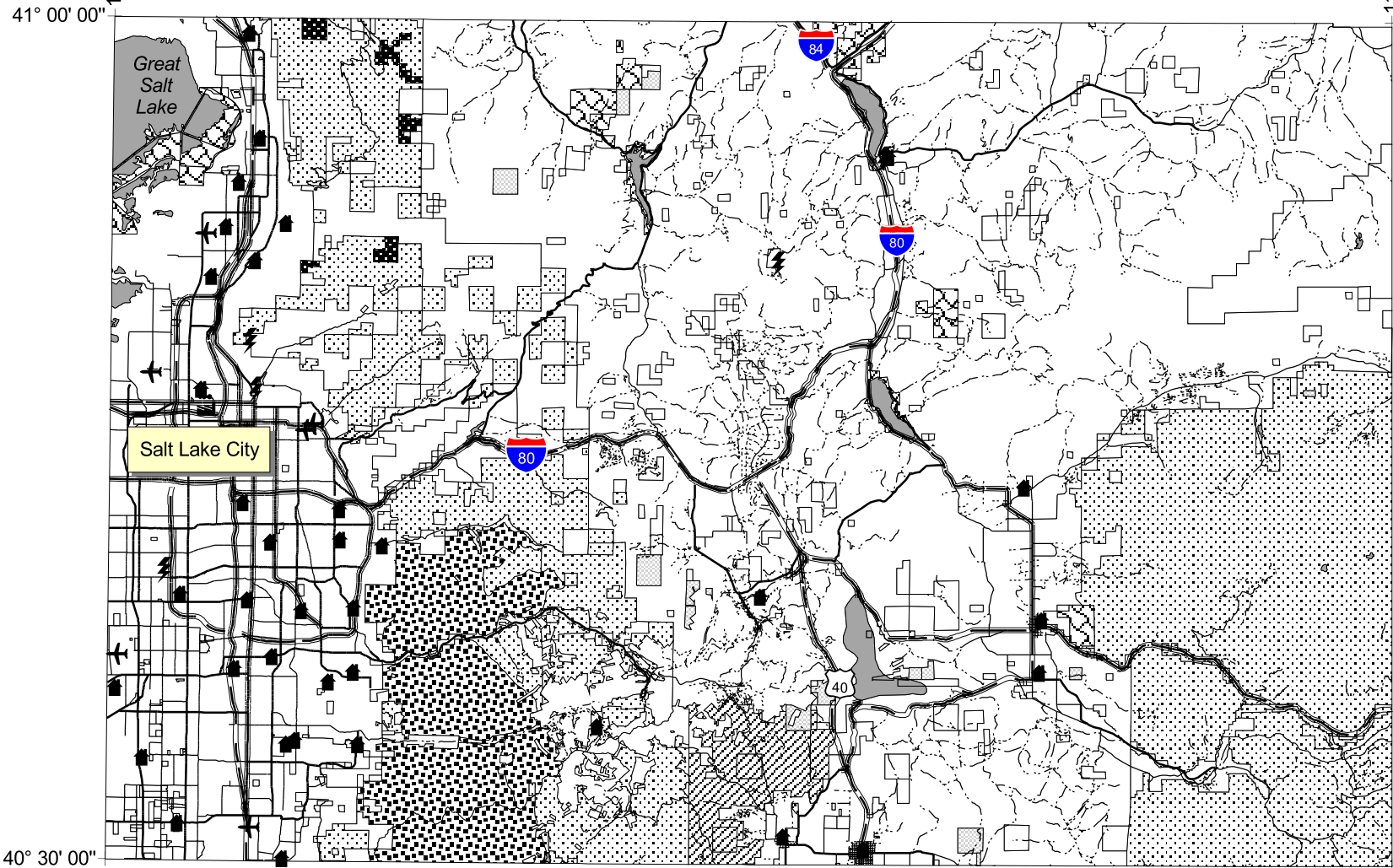
- ◇ both
- ◇ metallic
- ✕ non-metallic

Roads

- ▬ paved
- ▬ secondary paved
- ▬ improved gravel
- ▬ dirt/gravel
- ▬ Quad boundary
- ▬ Lake/Reservoir
- + Lat-Long tic



Land Ownership Salt Lake City Quadrangle Davis, Morgan, Salt Lake, Summit, Utah, and Wasatch Counties, Utah



- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Land ownership**
- Airport
 - Communications
 - Power plant
 - City/Town
 - Land to USA
 - US Forest Service
 - BLM
 - State
 - Private
 - State Park
 - State Wildlife Refuge
 - Wilderness
 - Water
 - Lat-Long tic

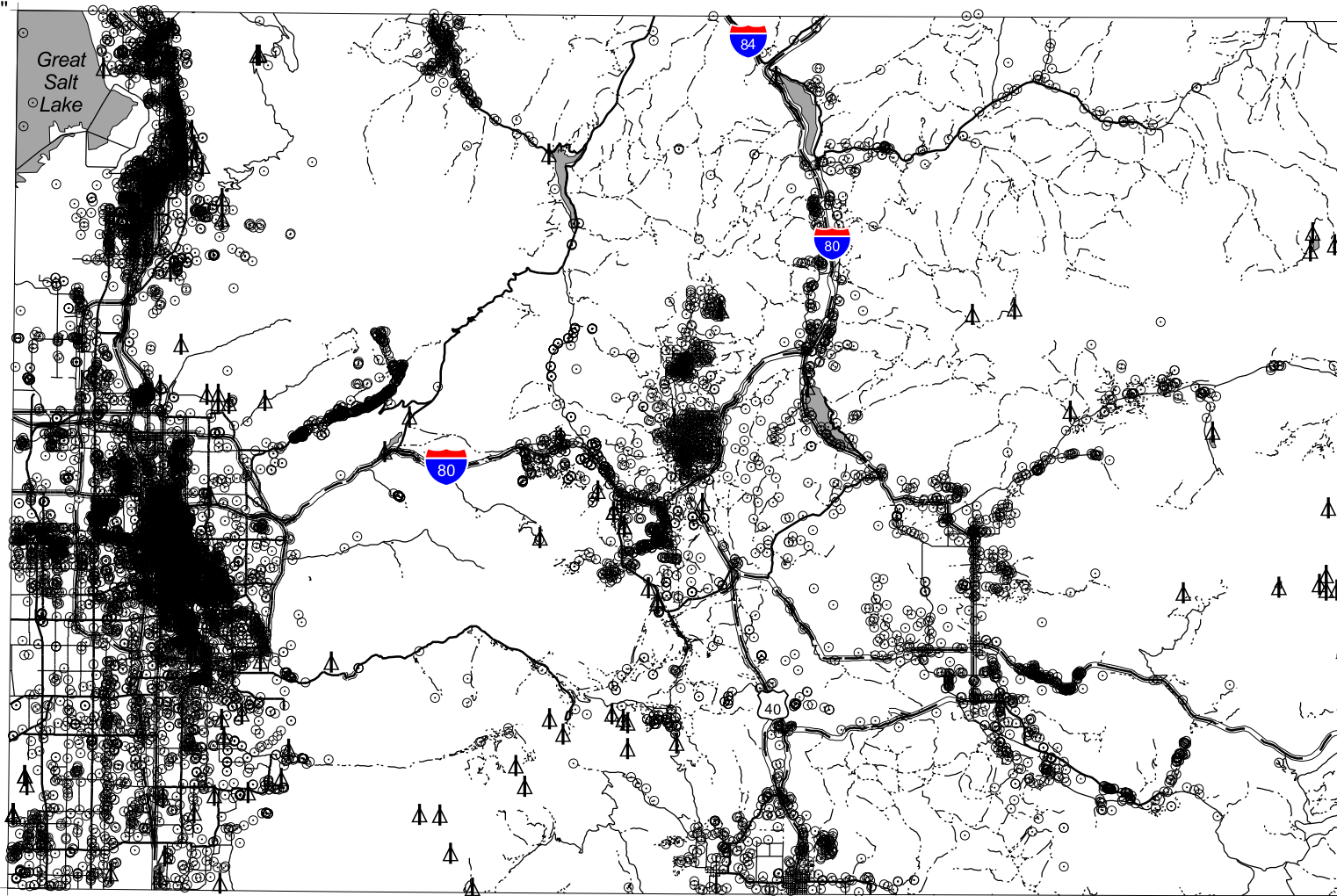
Water Rights Locations Salt Lake City Quadrangle Davis, Morgan, Salt Lake, Summit, Utah, and Wasatch Counties, Utah

41° 00' 00"

112° 00' 00"

111° 00' 00"

40° 30' 00"



Water rights

○ underground

▲ dams

Roads

— paved

— secondary paved

--- improved gravel

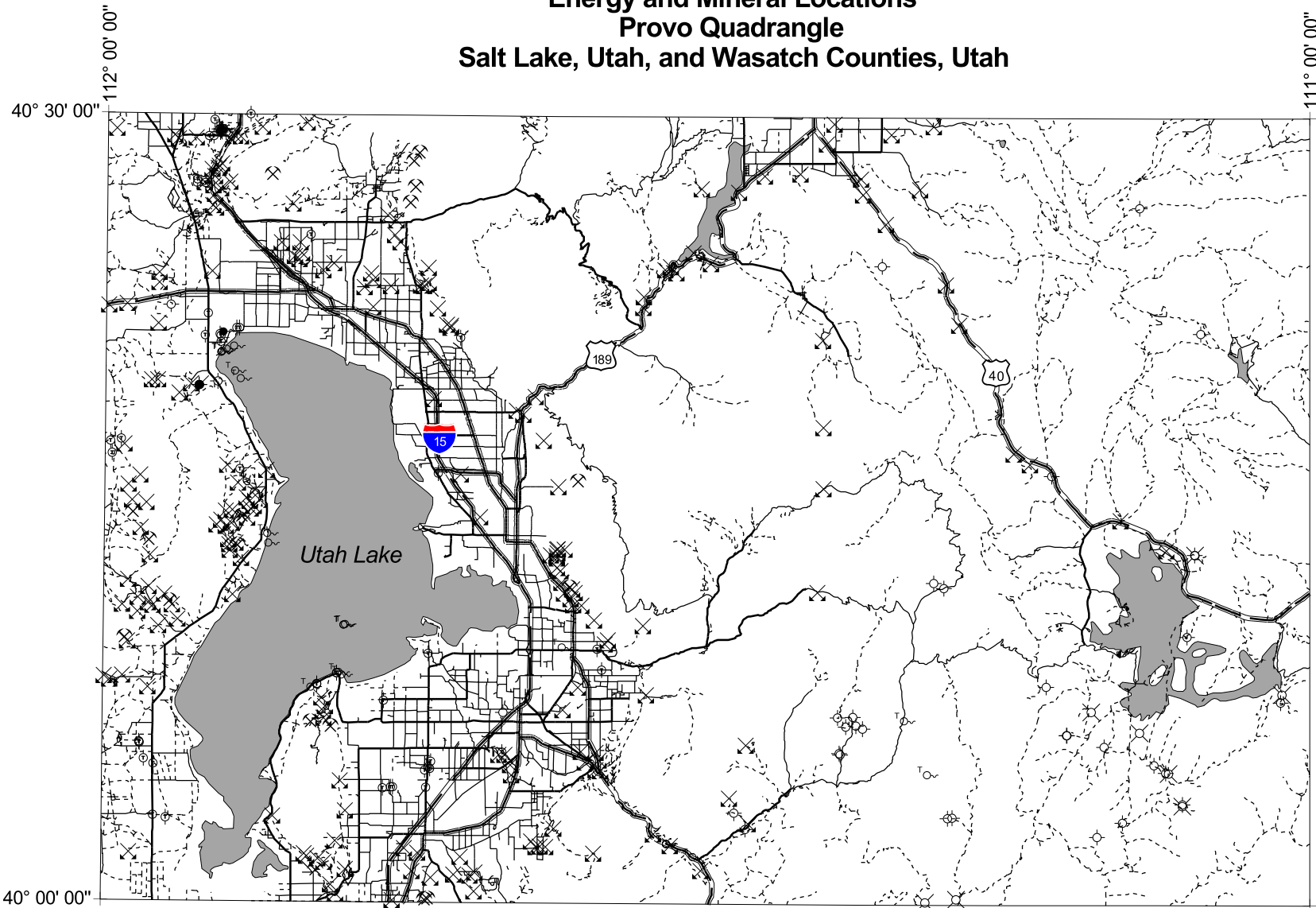
— dirt/gravel

□ Quad boundary

■ Lake/Reservoir

+ Lat-Long tic

Energy and Mineral Locations Provo Quadrangle Salt Lake, Utah, and Wasatch Counties, Utah



- Geothermal**
- spring
 - spring (?)
 - ⊕ well
 - ⊕ other geothermal well
- Oil shale**
- ⊗ drill hole
- Oil & Gas**
- shut in oil well
 - ⊕ plugged & abandoned
- Minerals**
- ◇ both
 - ⊗ metallic
 - ⊗ non-metallic
- Roads**
- ▬ paved
 - ▬ secondary paved
 - ▬ improved gravel
 - ▬ dirt/gravel
- ▬ Quad boundary
- ▬ Lake/Reservoir
- + Lat-Long tic

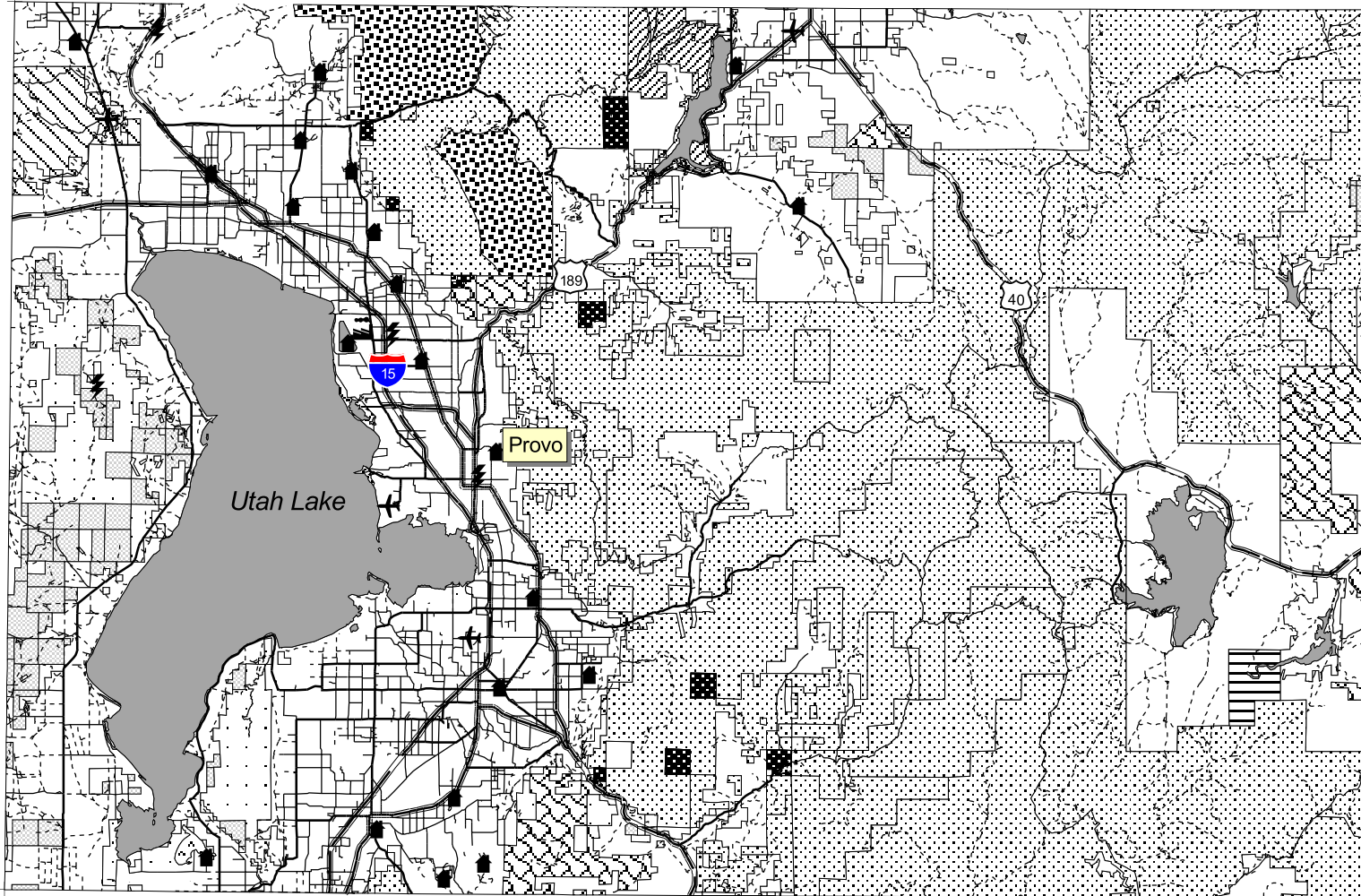
Land Ownership Provo Quadrangle Salt Lake, Utah, and Wasatch Counties, Utah

40° 30' 00"

112° 00' 00"

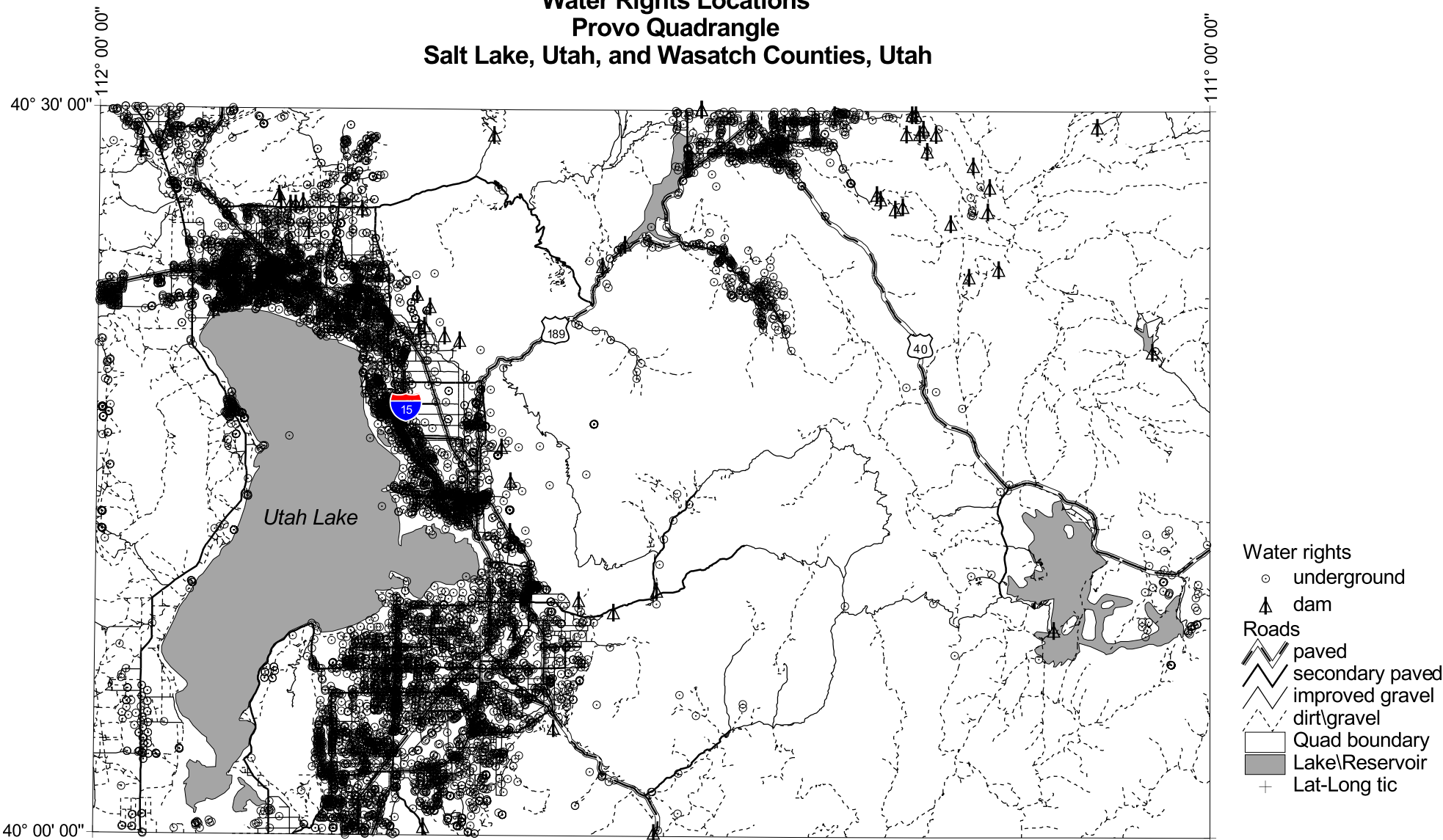
111° 00' 00"

40° 00' 00"

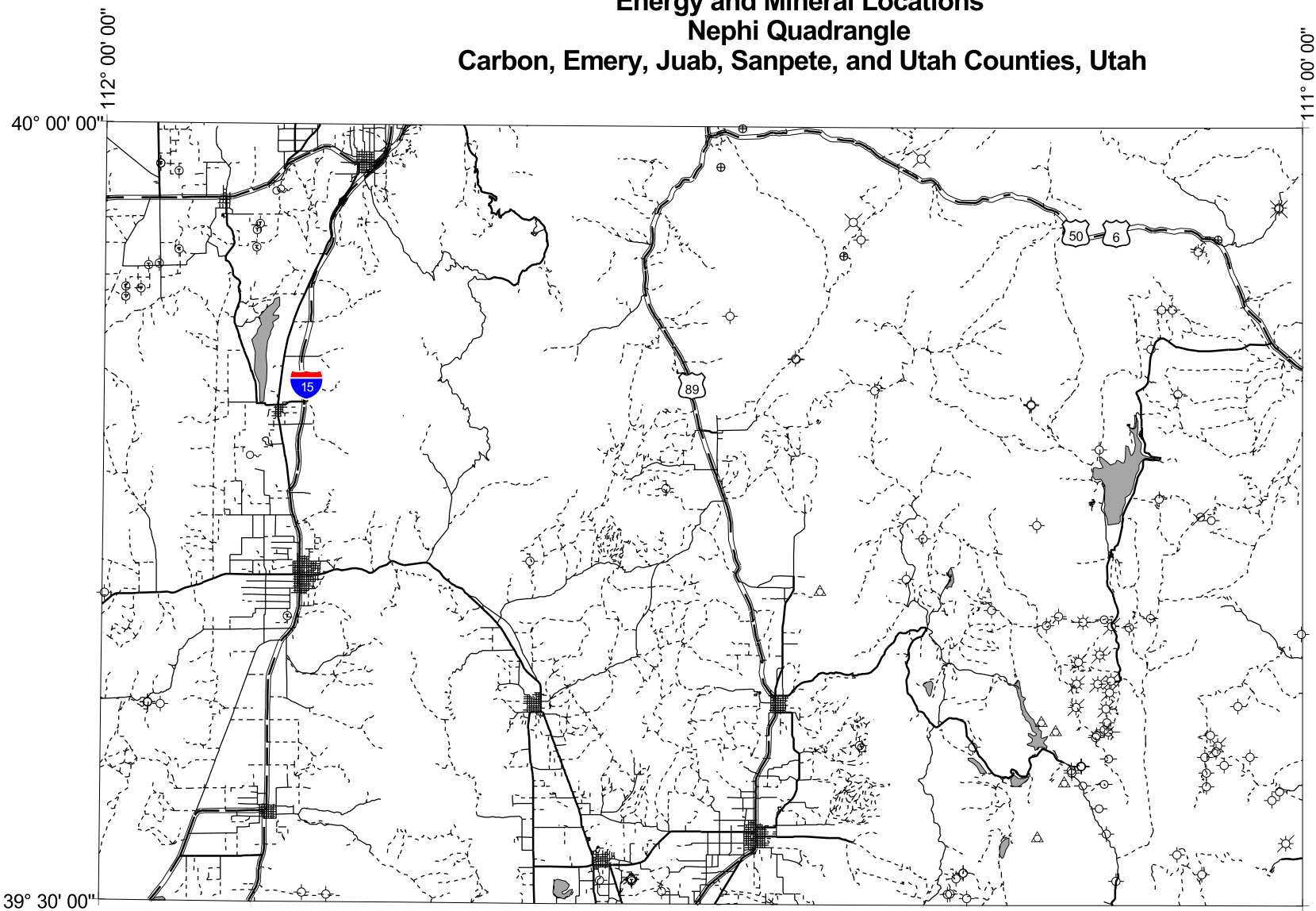



- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
 - Airport
 - Communications
 - Power plant
 - City/Town
- Land ownership**
- Land to USA
 - US Forest Service
 - BLM
 - State
 - Native American
 - Private
 - Military
 - Natl Park/Monument
 - State Park
 - State Wildlife Refuge
 - Wilderness
 - Water
 - Intermittent Water
 - Lat-Long tic


Water Rights Locations Provo Quadrangle Salt Lake, Utah, and Wasatch Counties, Utah





Energy and Mineral Locations Nephi Quadrangle Carbon, Emery, Juab, Sanpete, and Utah Counties, Utah





Geothermal
 spring

 well


Tar sand
 umos


Oil shale
 drill hole

Coal
 umos

Oil & Gas
 abandoned

 drilling

 shut in gas well


 plugged & abandoned


 plugged gas well


 temporarily abandoned


Roads


 paved

 secondary paved

 improved gravel

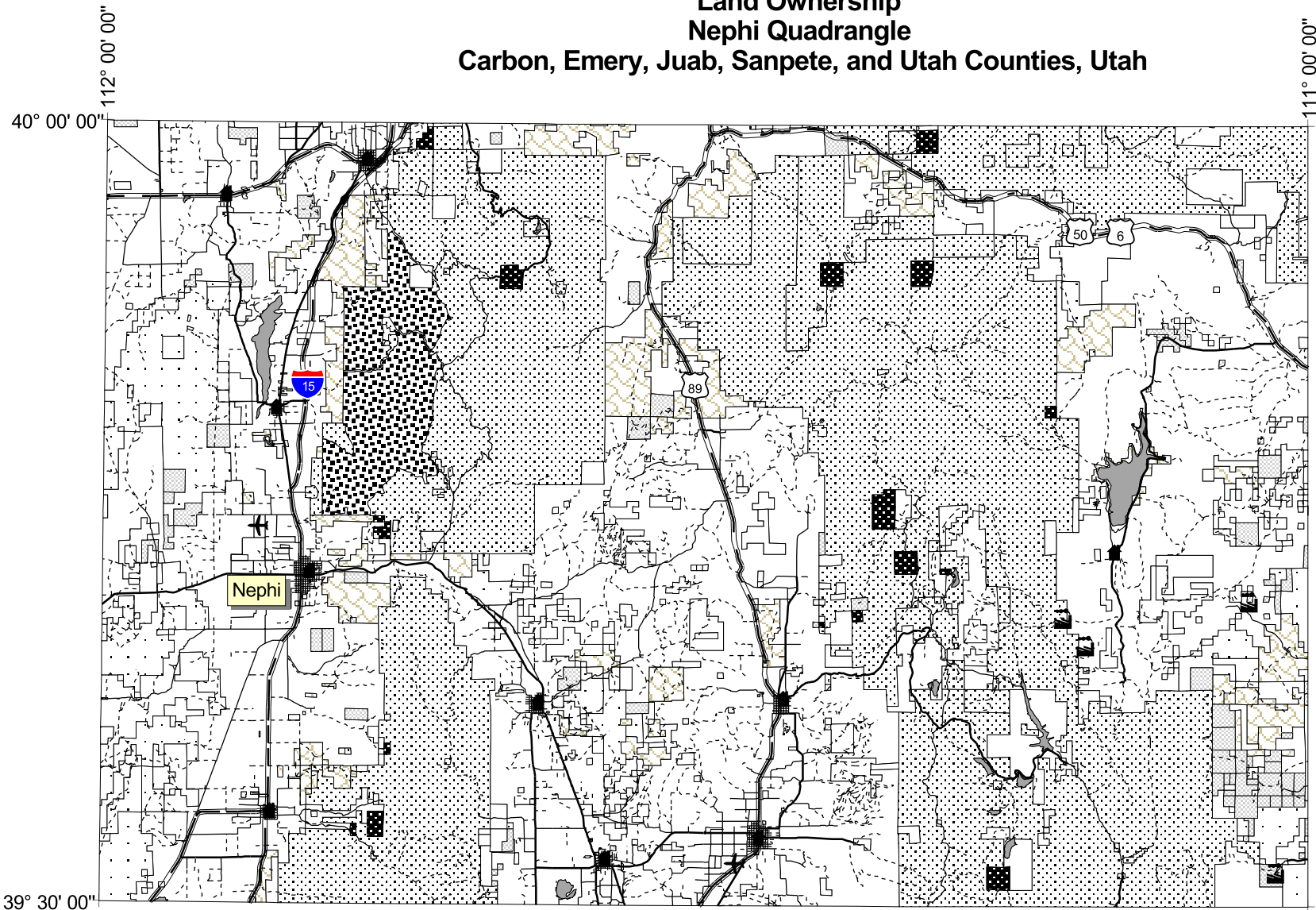
 dirt/gravel

 Quad boundary

 Lake/Reservoir

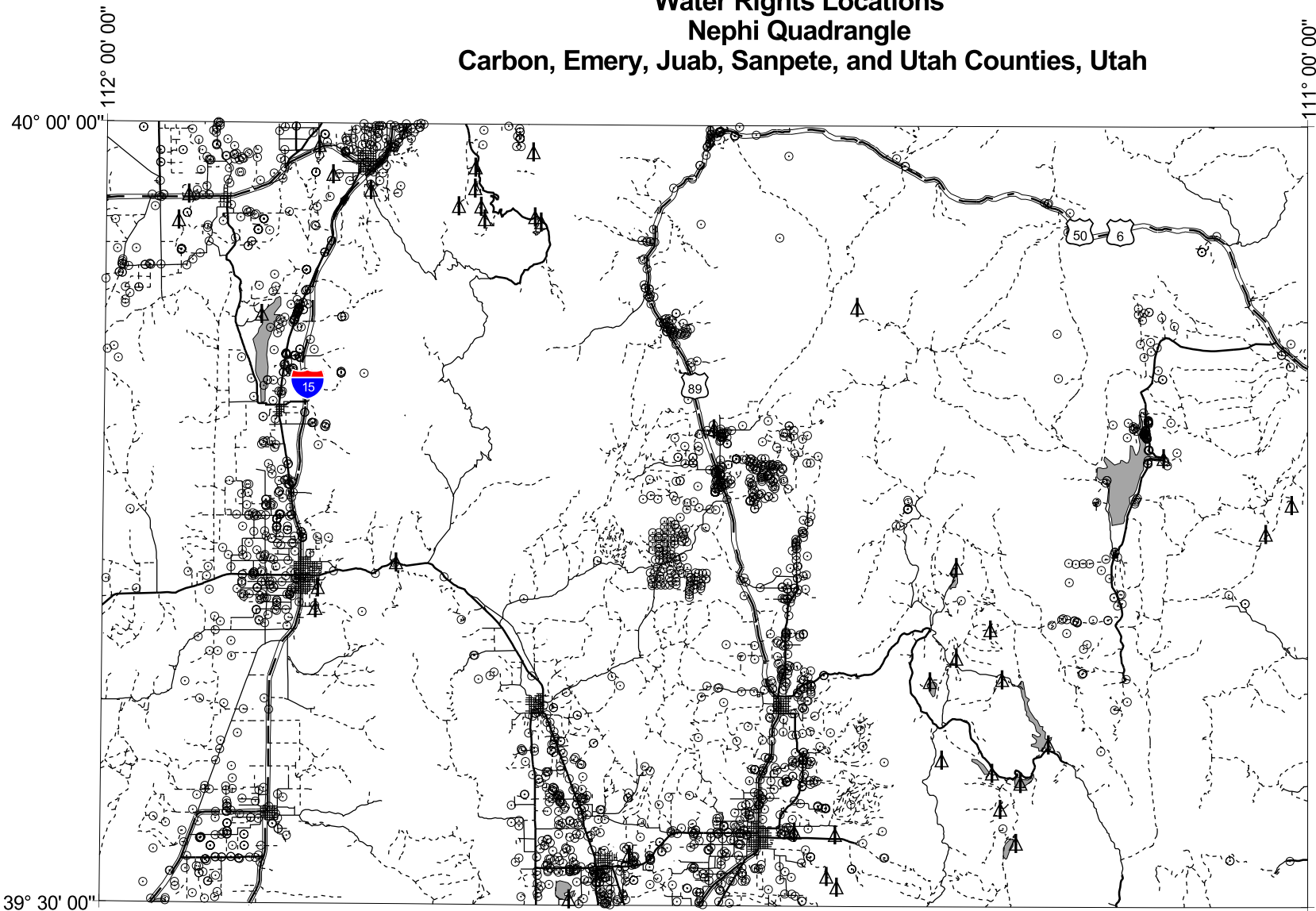
 Lat-Long tic

Land Ownership Nephi Quadrangle Carbon, Emery, Juab, Sanpete, and Utah Counties, Utah



- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Other Features**
- Airport
 - Power plant
 - City/Town
 - Land to USA
- Land ownership**
- US Forest Service
 - BLM
 - State
 - Private
 - State Wildlife Refuge
 - Wilderness
 - Water
 - Intermittent water
 - Lat-Long tic

Water Rights Locations Nephi Quadrangle Carbon, Emery, Juab, Sanpete, and Utah Counties, Utah



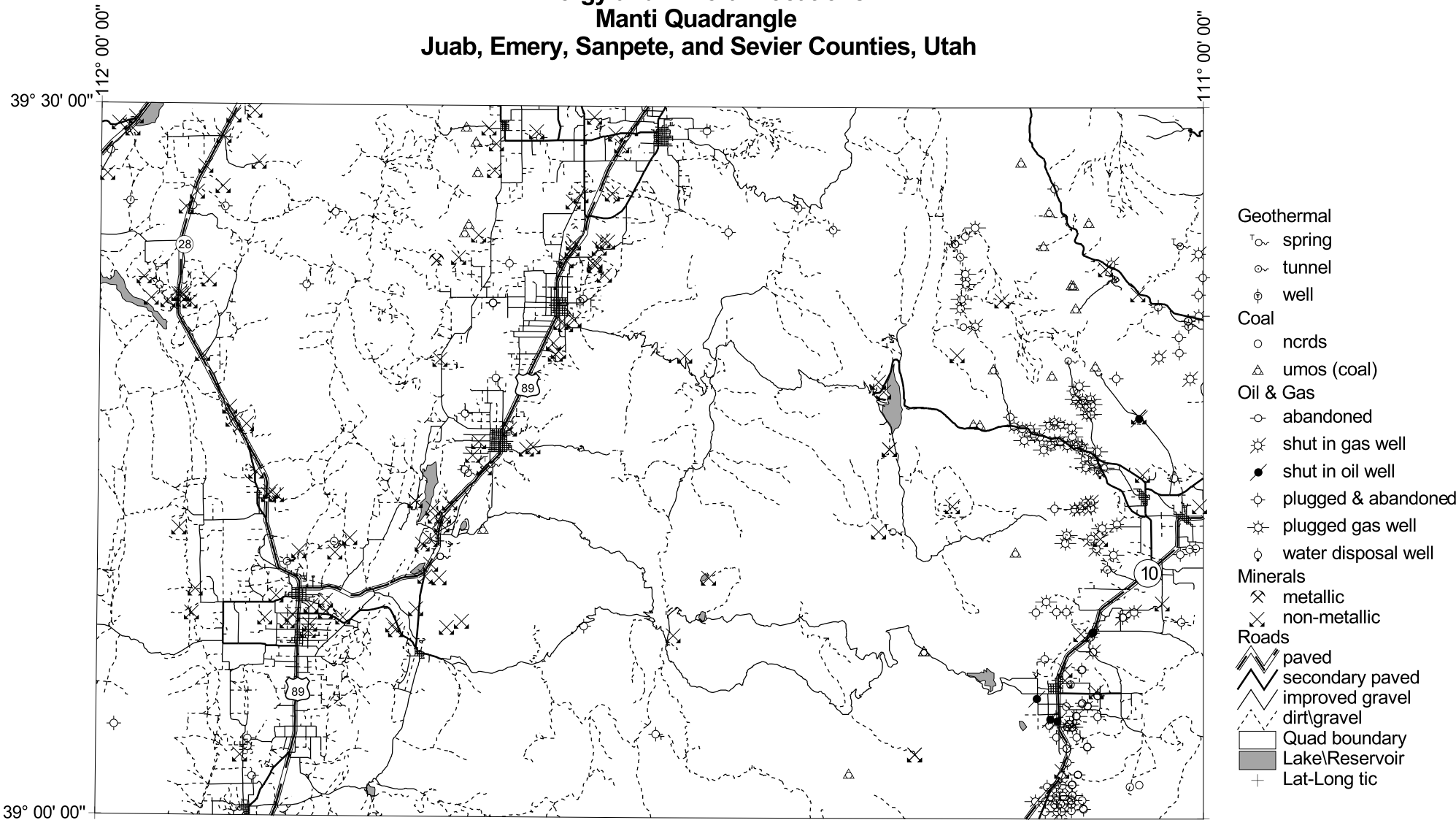
Water rights

- underground
- ▲ dam

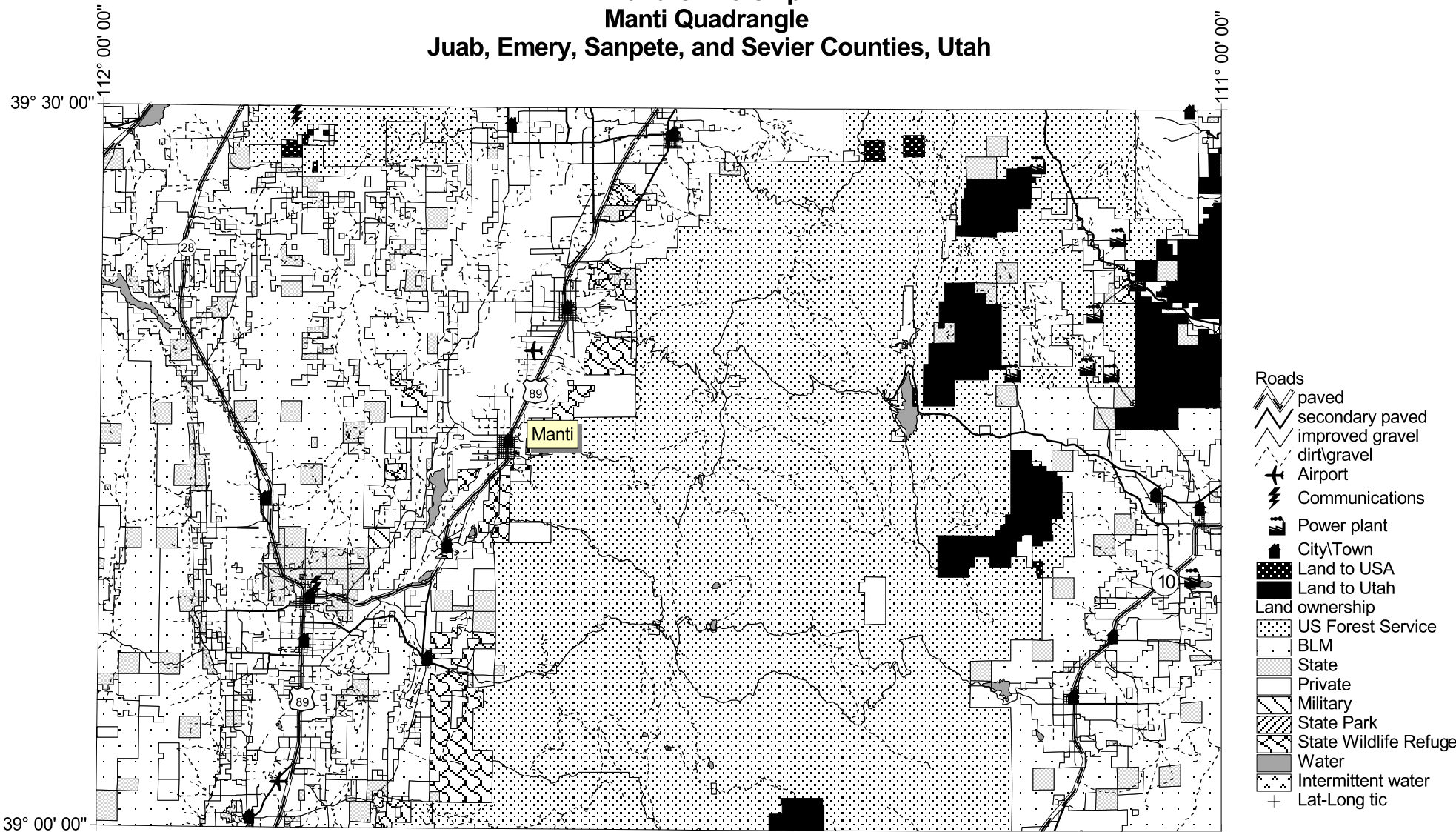
Roads

- paved
- - - secondary paved
- ... improved gravel
- · - dirt/gravel
- Quad boundary
- Lake/Reservoir
- + Lat-Long tic

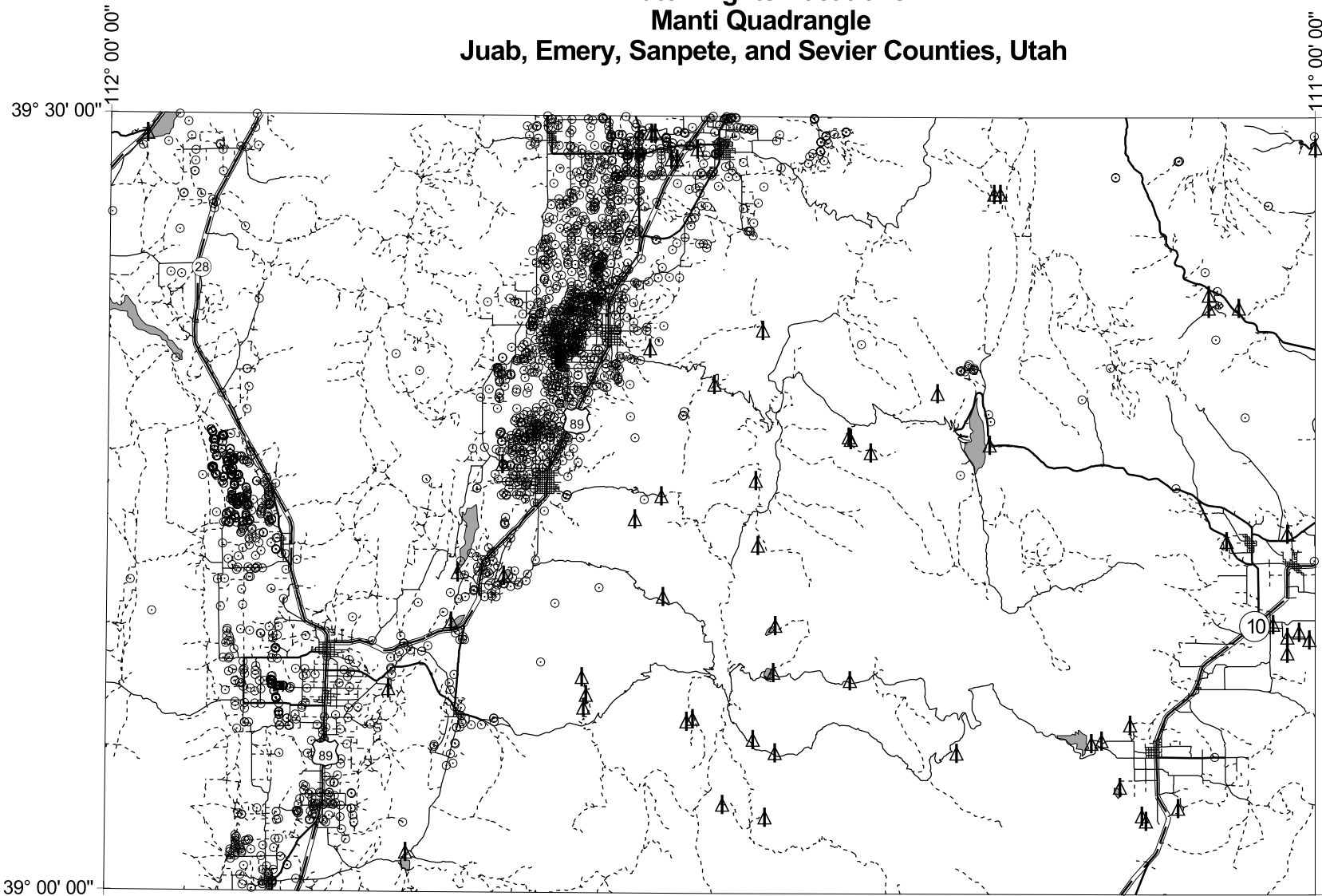
Energy and Mineral Locations Manti Quadrangle Juab, Emery, Sanpete, and Sevier Counties, Utah



Land Ownership Manti Quadrangle Juab, Emery, Sanpete, and Sevier Counties, Utah

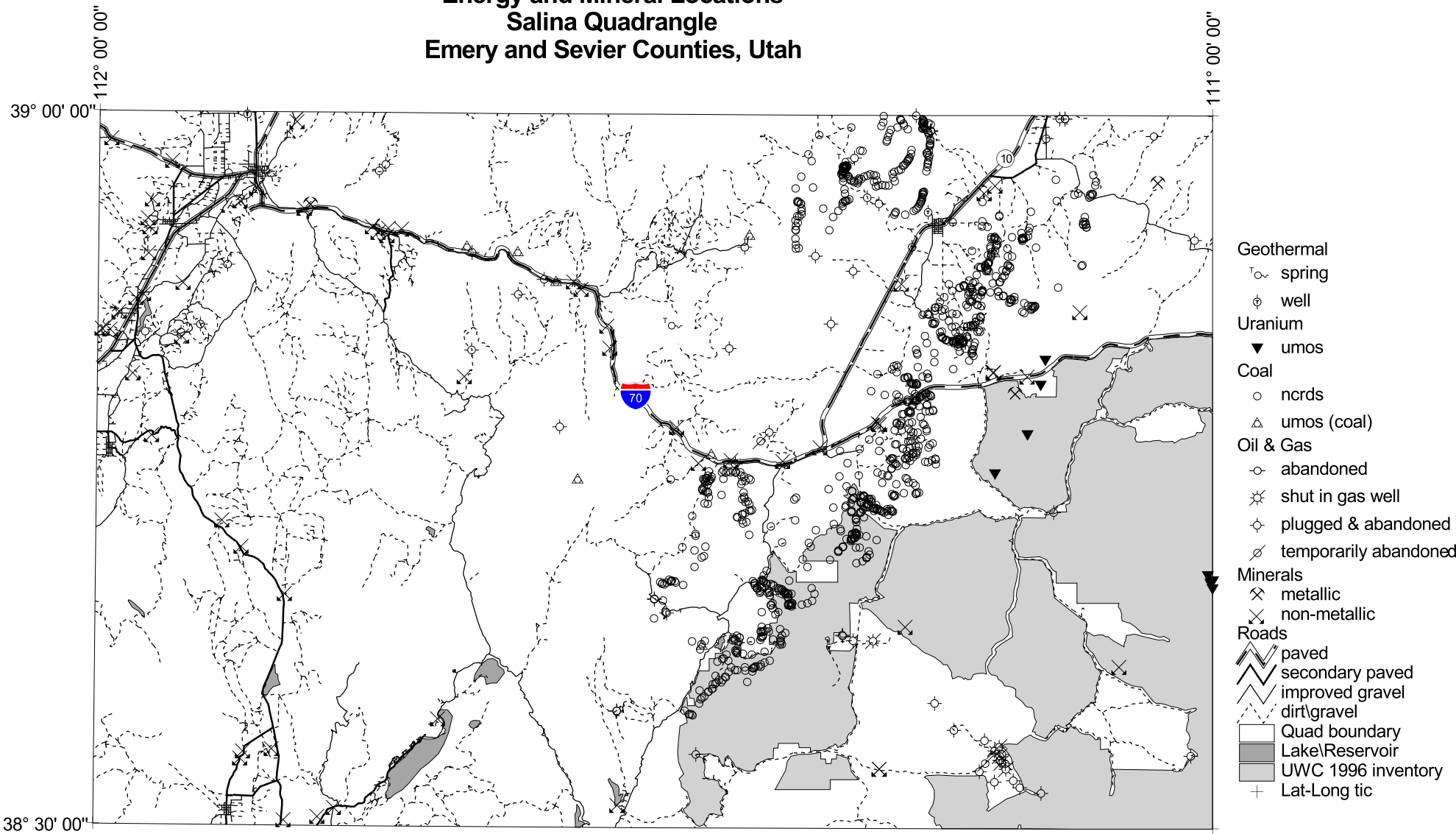


Water Rights Locations Manti Quadrangle Juab, Emery, Sanpete, and Sevier Counties, Utah

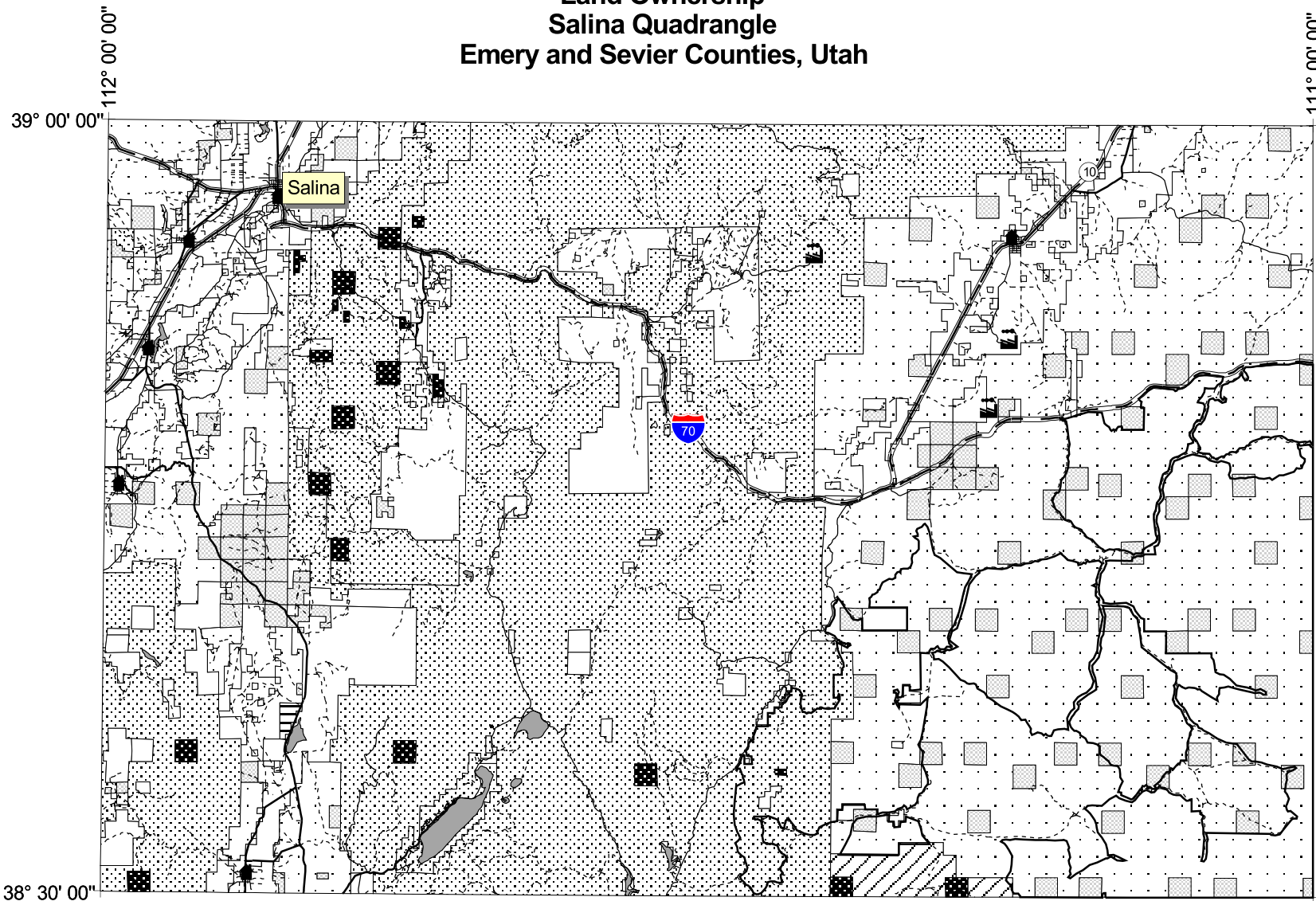


- Water rights
- underground
 - ▲ dam
- Roads
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Quad boundary
- Lake/Reservoir
- + Lat-Long tic

Energy and Mineral Locations Salina Quadrangle Emery and Sevier Counties, Utah

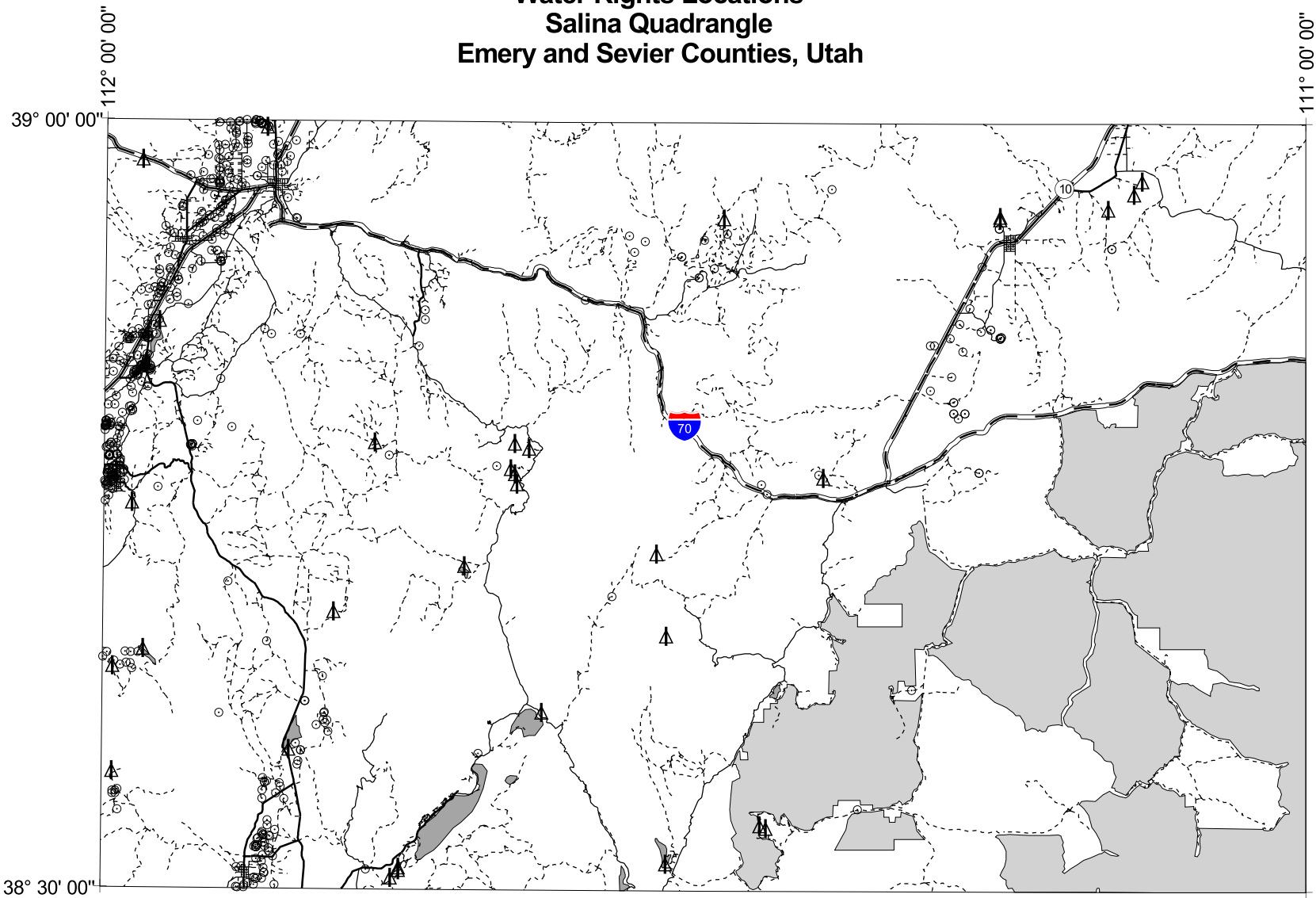


Land Ownership Salina Quadrangle Emery and Sevier Counties, Utah

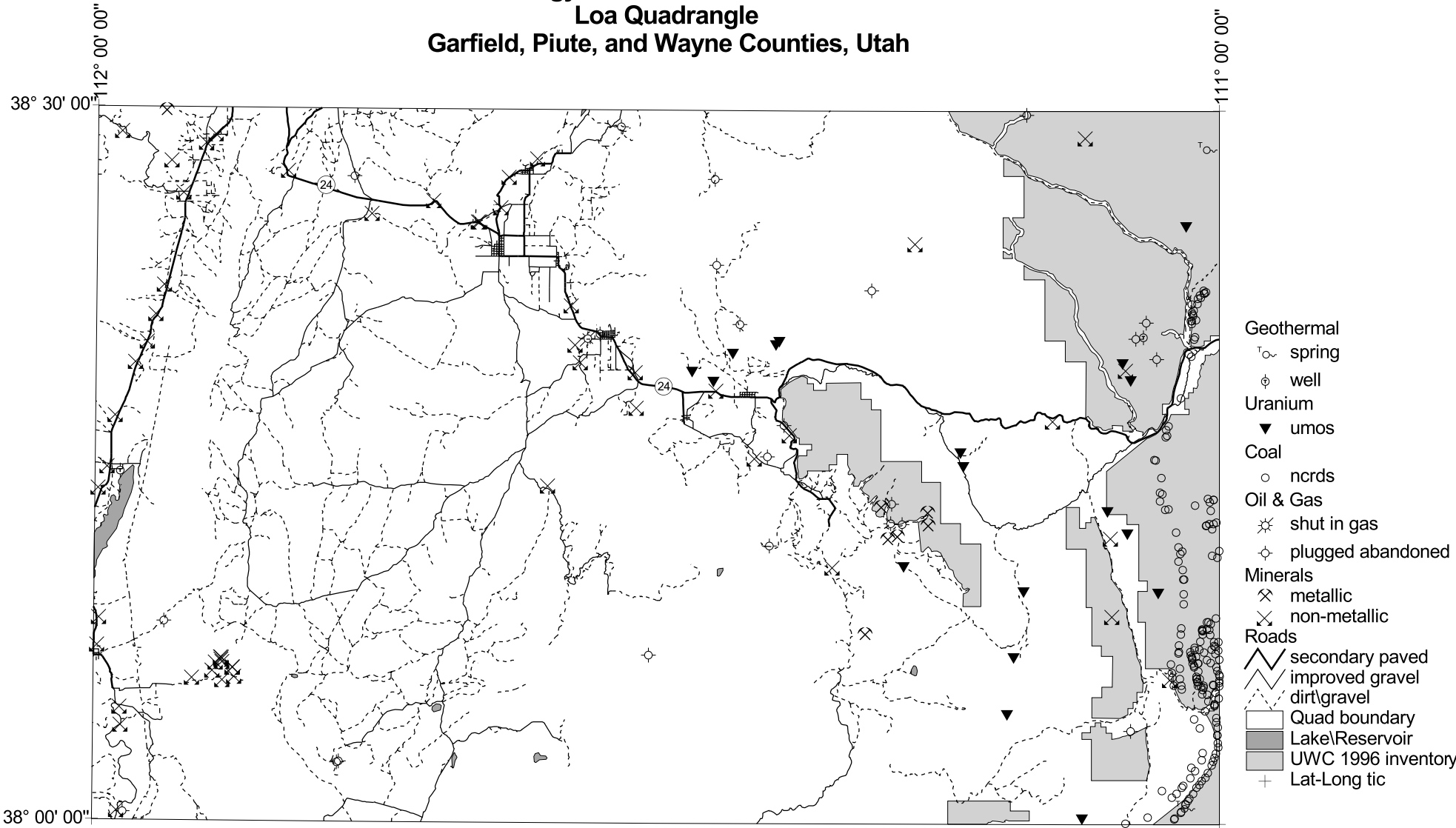


- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Power plant
- City/Town
- UWC 1996 inventory
- Land ownership**
- Land to USA
 - US Forest Service
 - BLM
 - State
 - Native American
 - Private
 - Natl Park/Monument
 - State Wildlife Refuge
 - Water
 - Intermittent water
 - Lat-Long tic

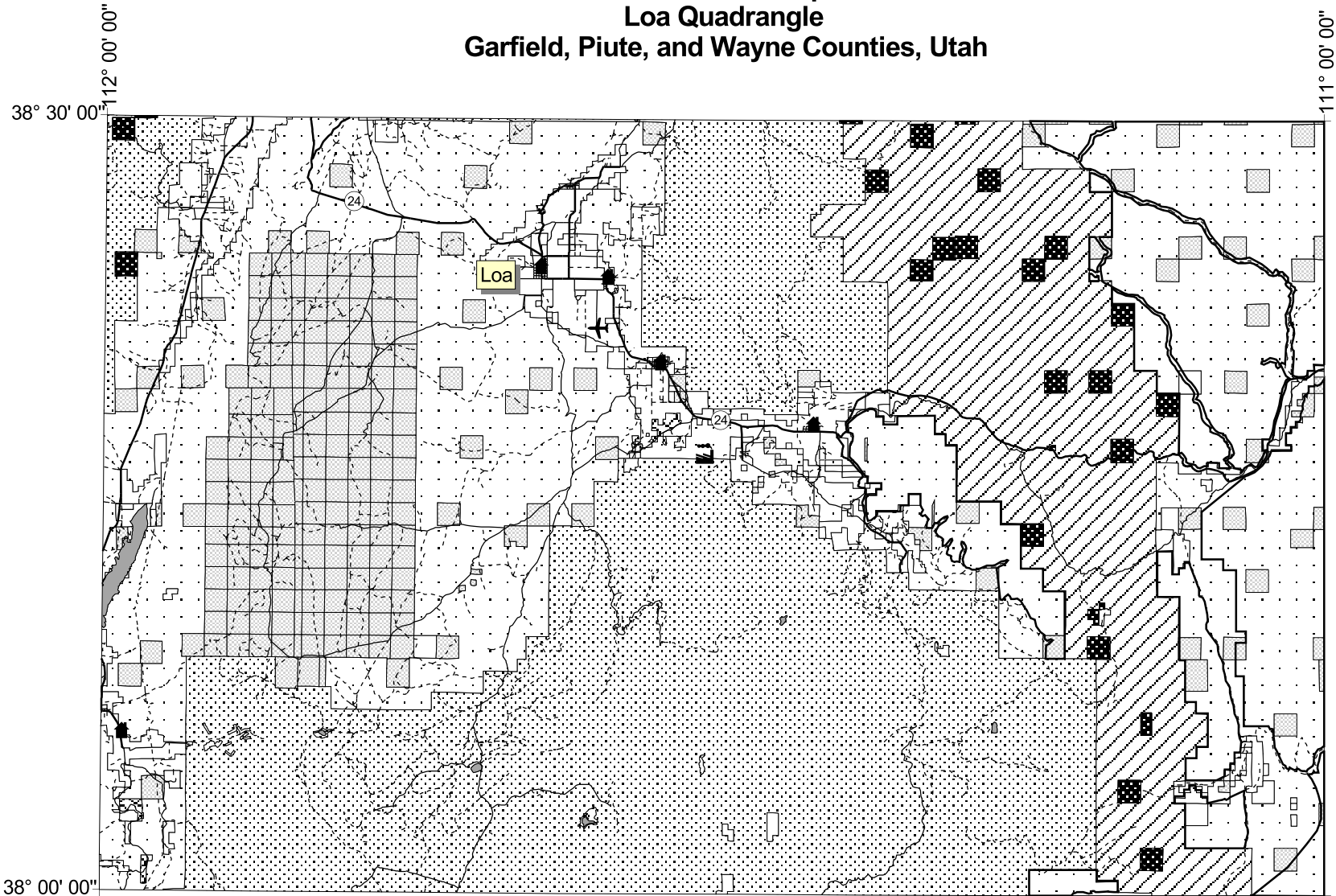
Water Rights Locations Salina Quadrangle Emery and Sevier Counties, Utah



Energy and Mineral Locations Loa Quadrangle Garfield, Piute, and Wayne Counties, Utah

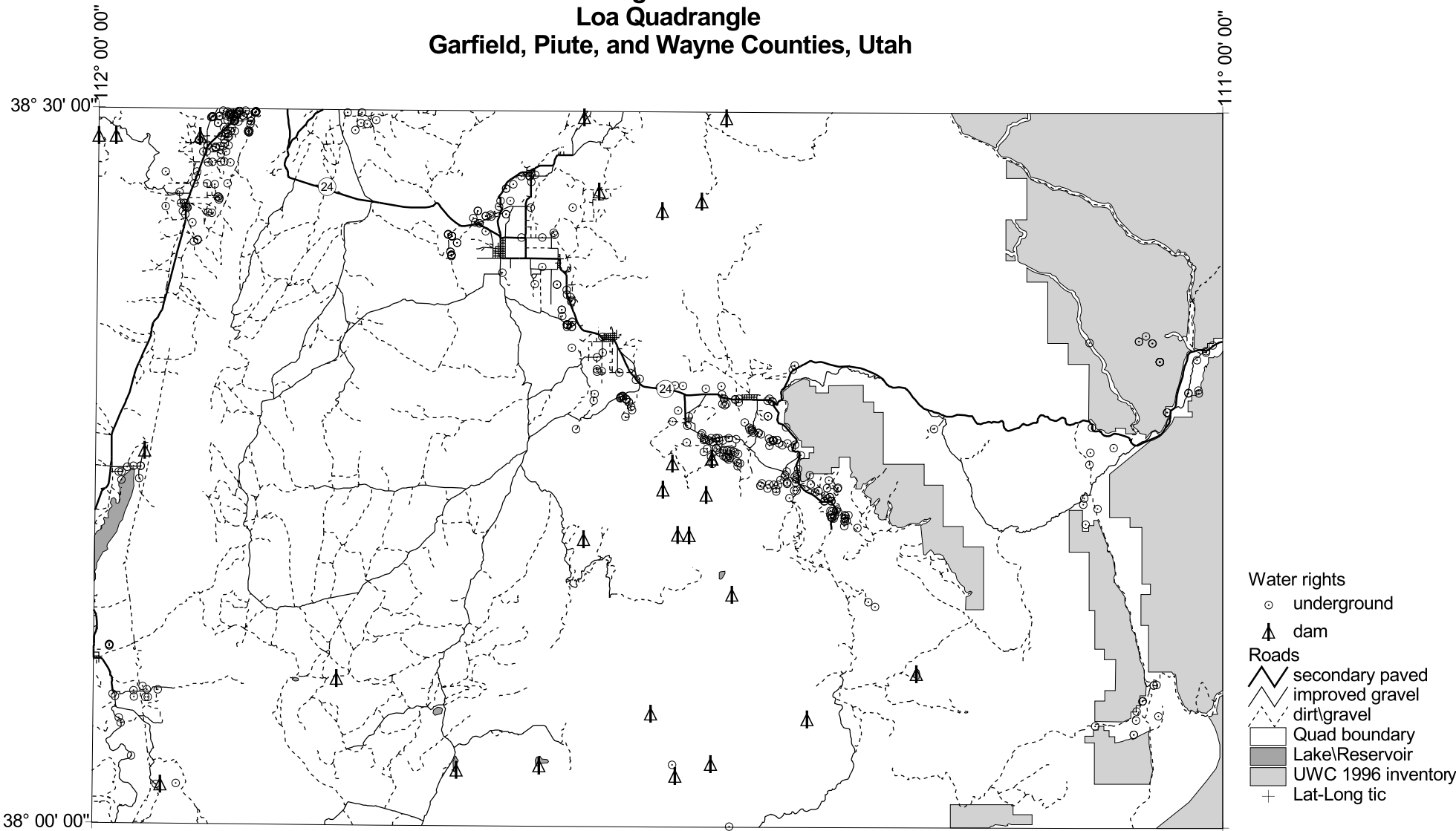


Land Ownership Loa Quadrangle Garfield, Piute, and Wayne Counties, Utah

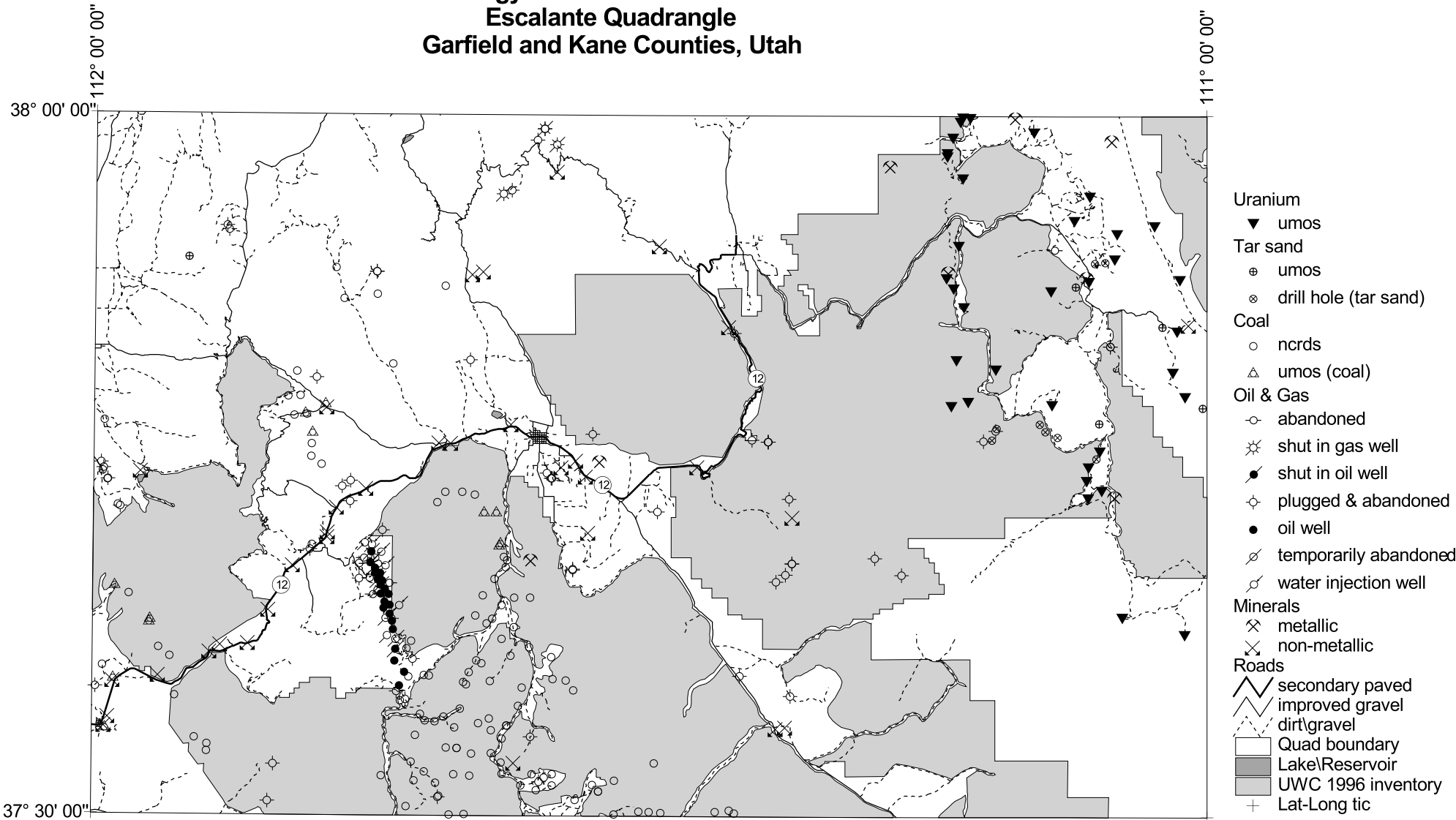


- Roads**
- secondary paved
 - improved gravel
 - dirt/gravel
 - Airport
 - Communications
 - City/Town
 - UWC 1996 inventory
 - Land to USA
- Land ownership**
- US Forest Service
 - BLM
 - State
 - Private
 - Natl park/Monument
 - State Wildlife Refuge
 - Water
 - Intermittent water
 - Loa_grat.shp

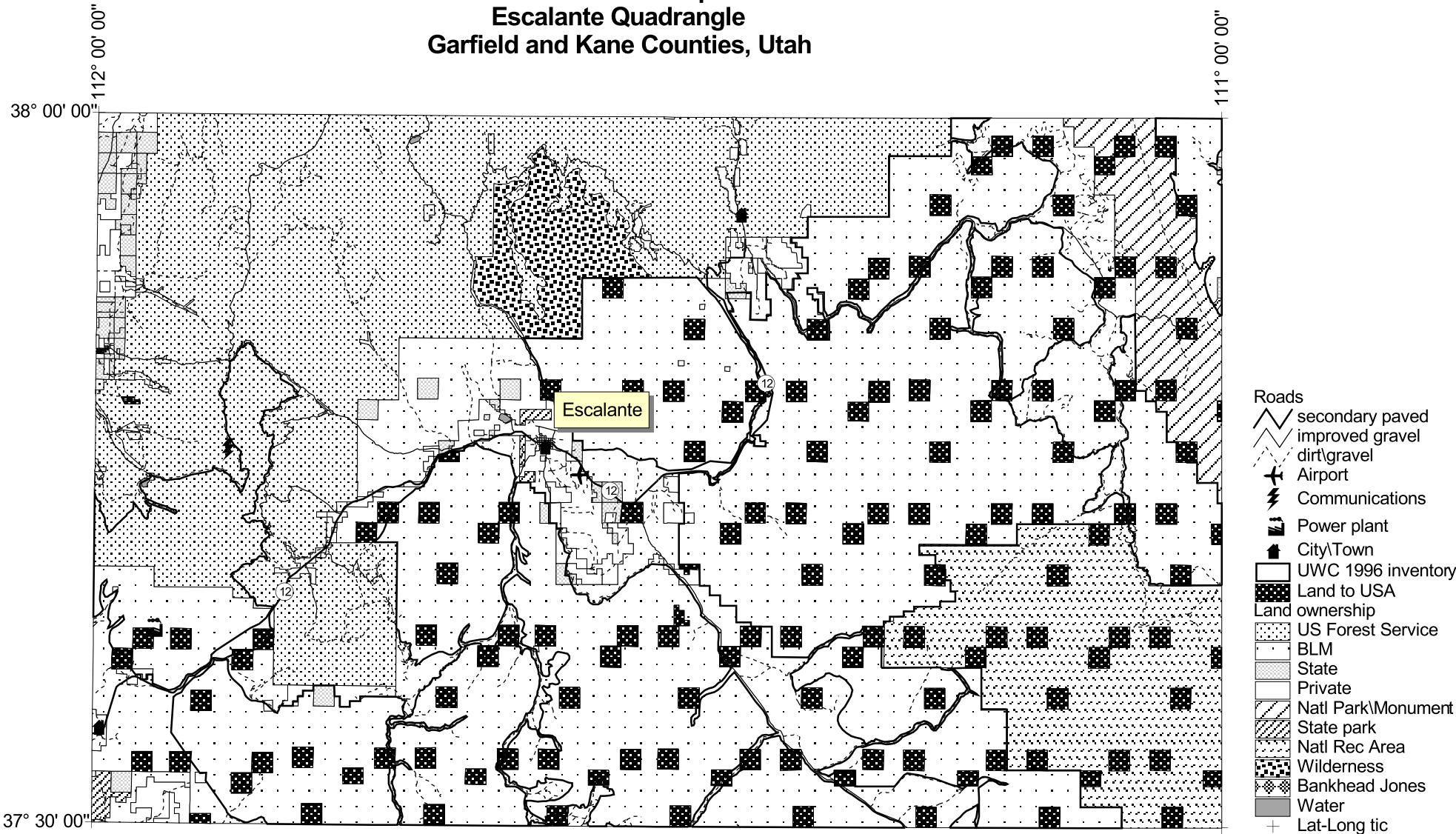
Water Rights Locations Loa Quadrangle Garfield, Piute, and Wayne Counties, Utah



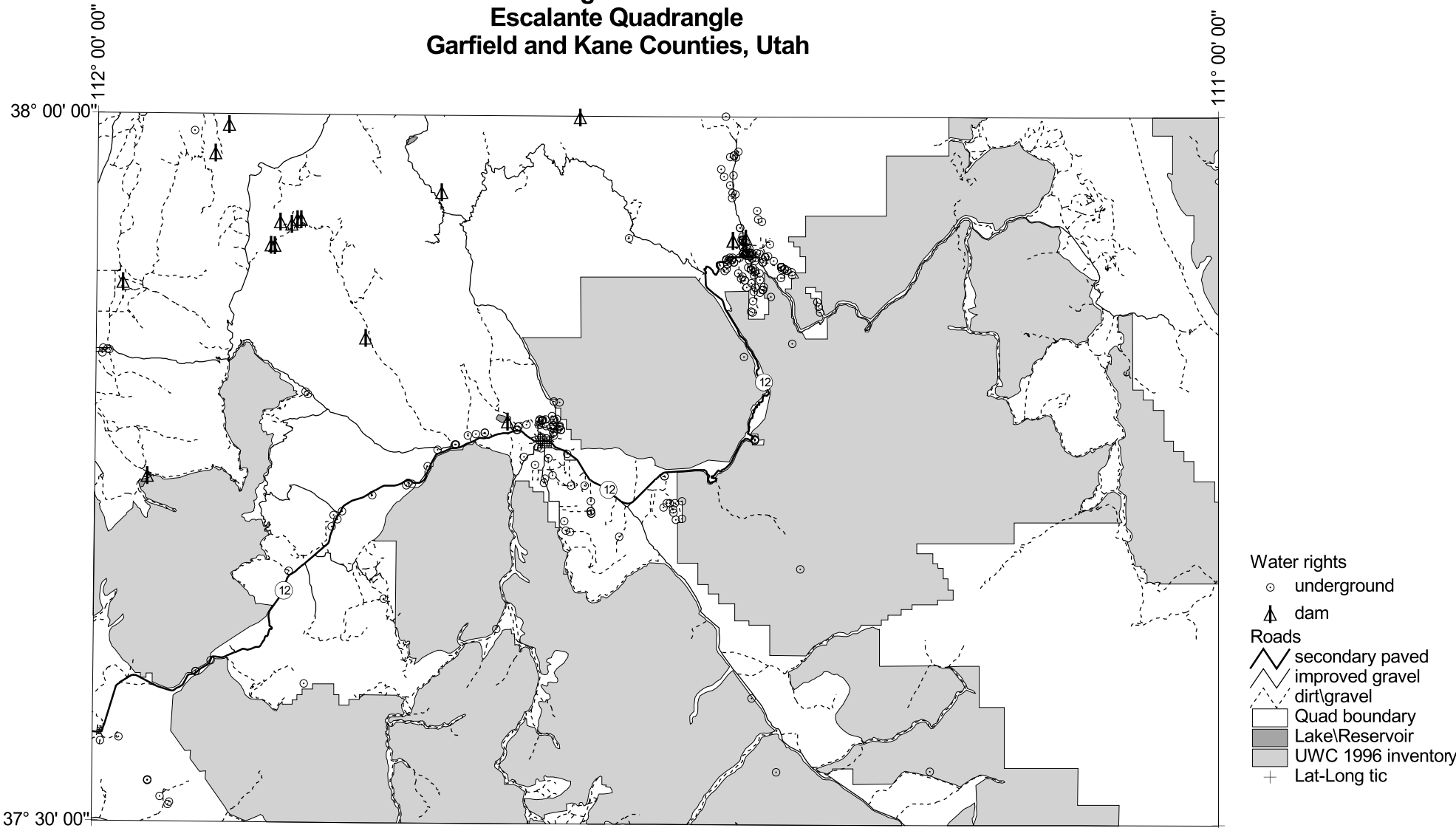
Energy and Mineral Locations Escalante Quadrangle Garfield and Kane Counties, Utah



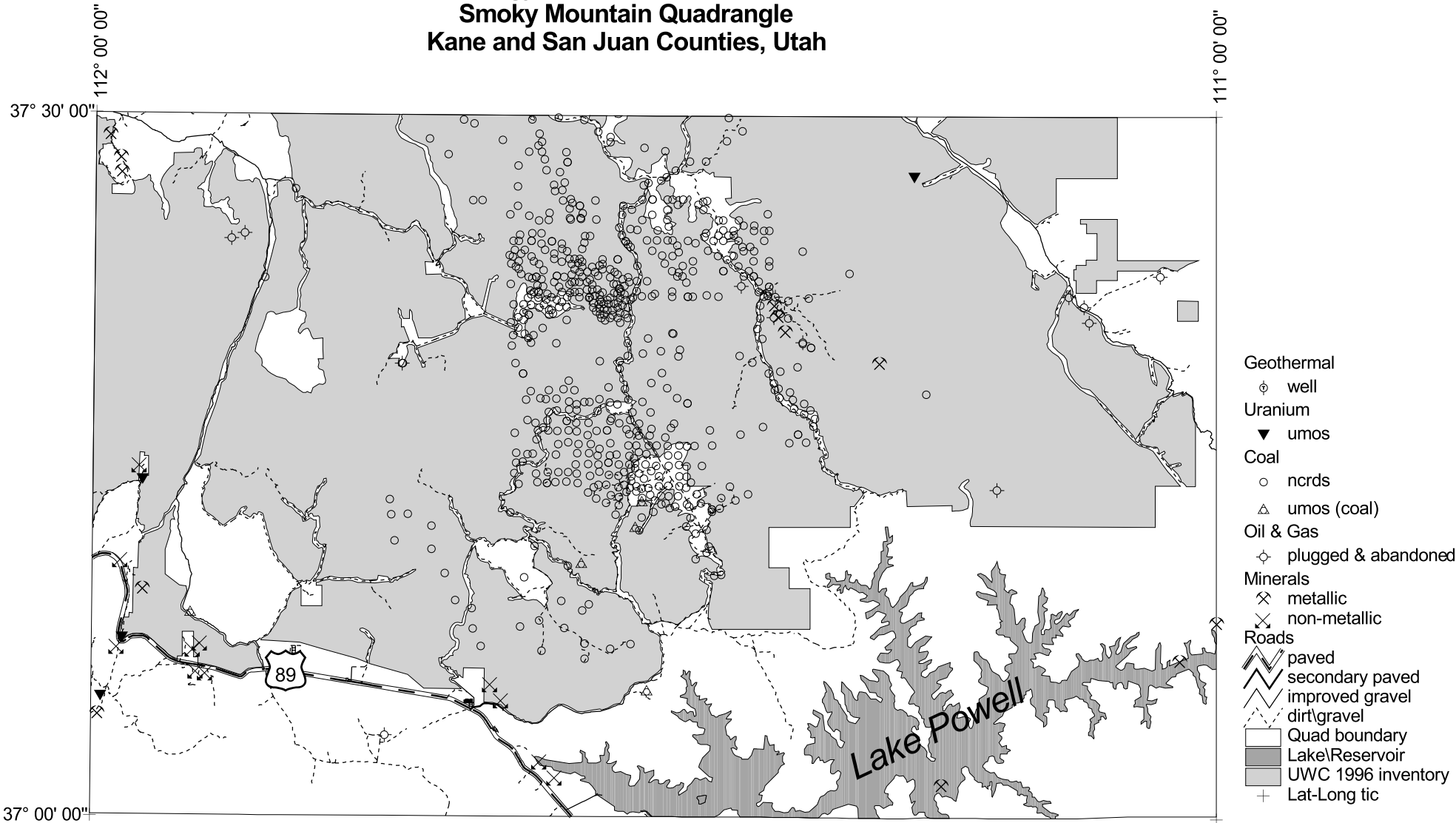
Land Ownership Escalante Quadrangle Garfield and Kane Counties, Utah



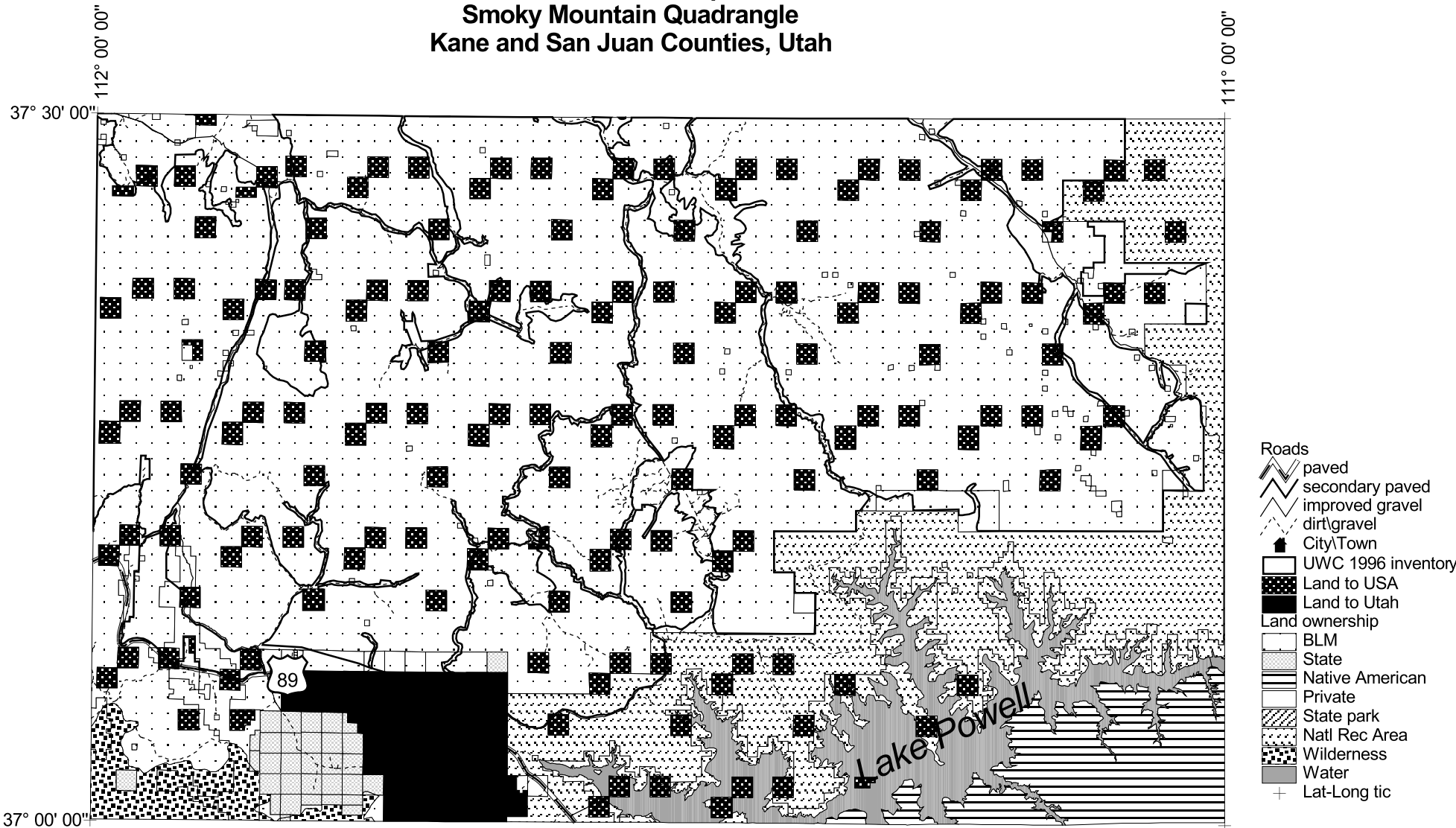
Water Rights Locations Escalante Quadrangle Garfield and Kane Counties, Utah



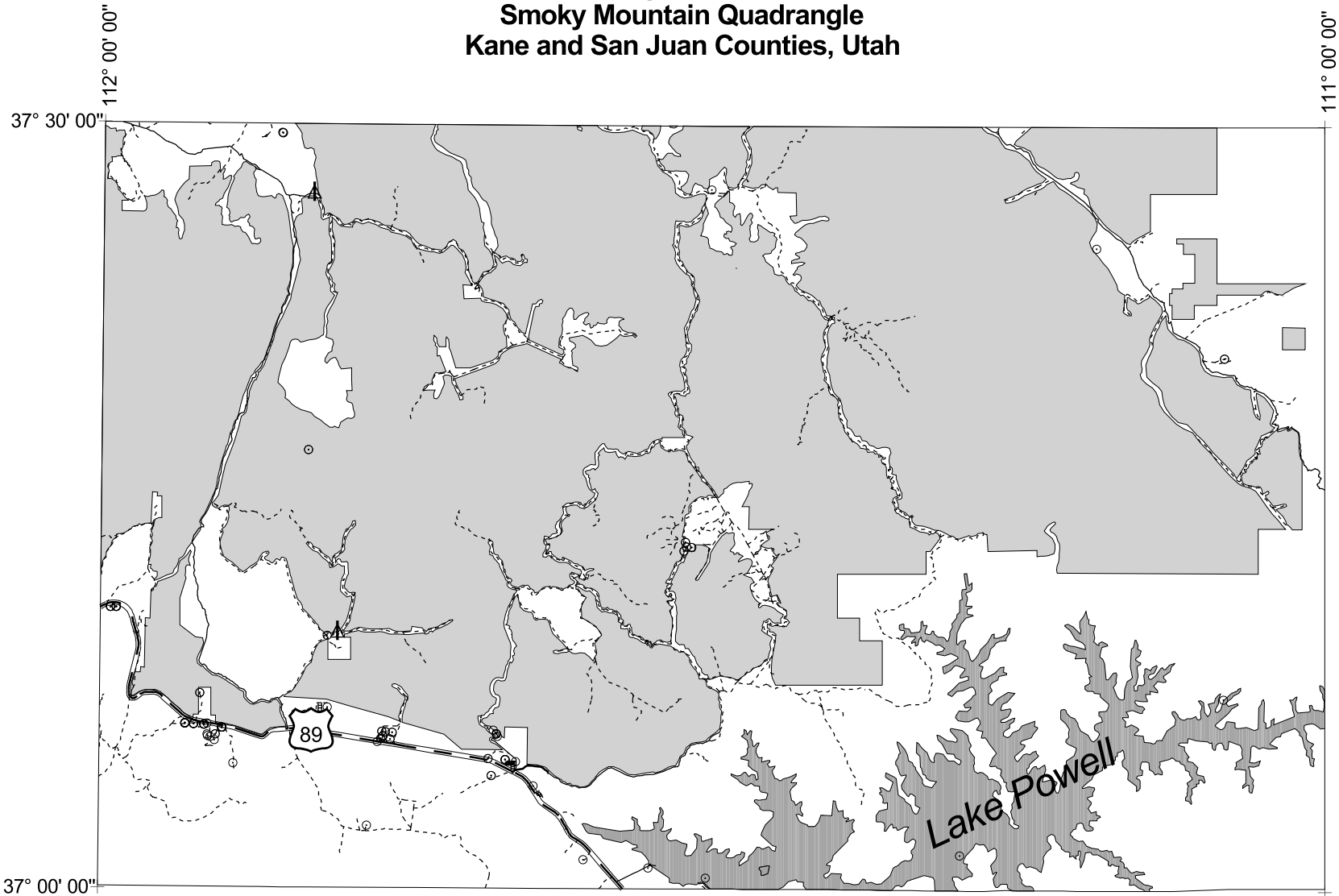
Energy and Mineral Locations Smoky Mountain Quadrangle Kane and San Juan Counties, Utah



Land Ownership Smoky Mountain Quadrangle Kane and San Juan Counties, Utah



Water Rights Locations Smoky Mountain Quadrangle Kane and San Juan Counties, Utah



Water rights

○ underground

▲ dam

Roads

▲ paved

▲ secondary paved

▲ improved gravel

▲ dirt/gravel

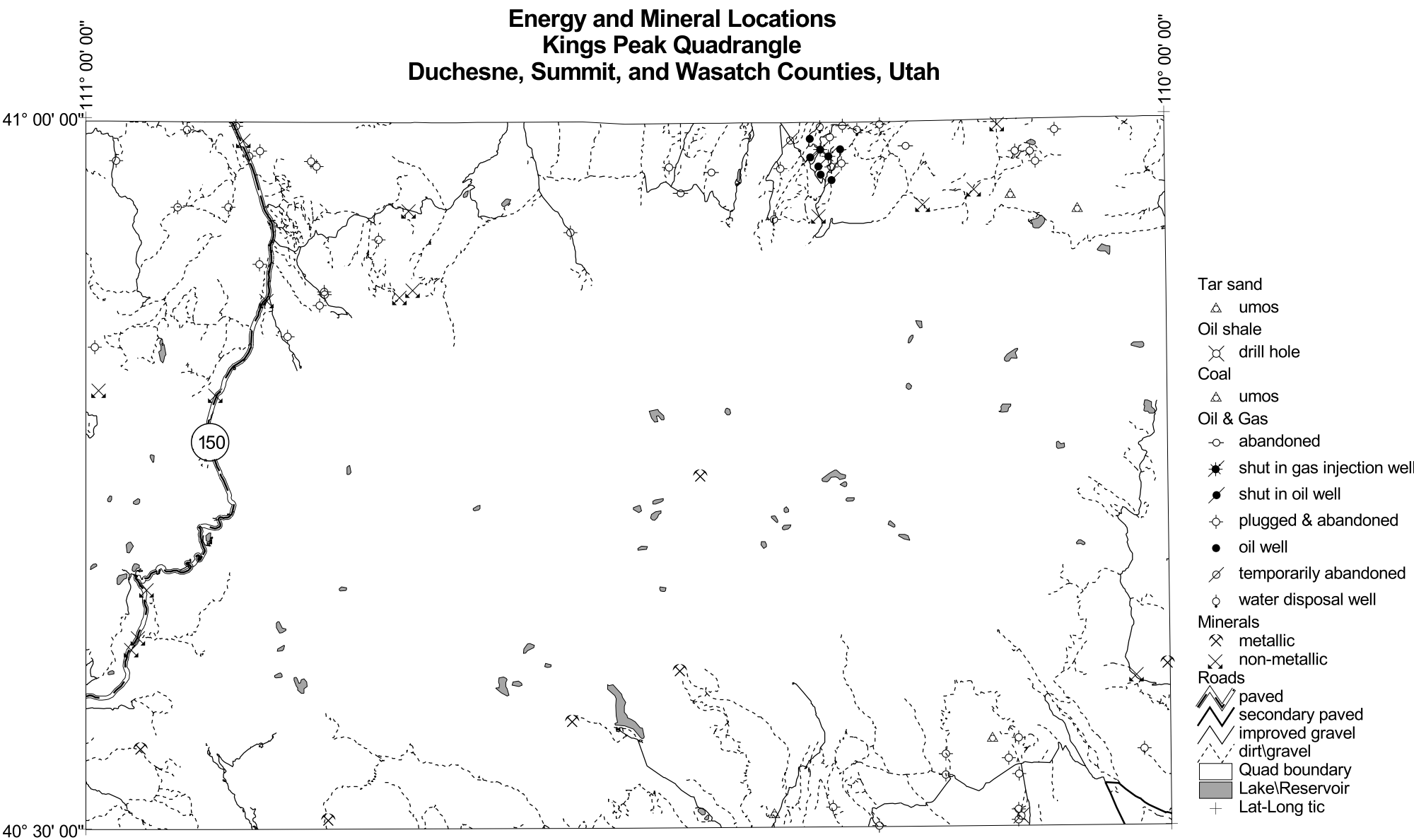
□ Quad boundary

■ Lake/Reservoir

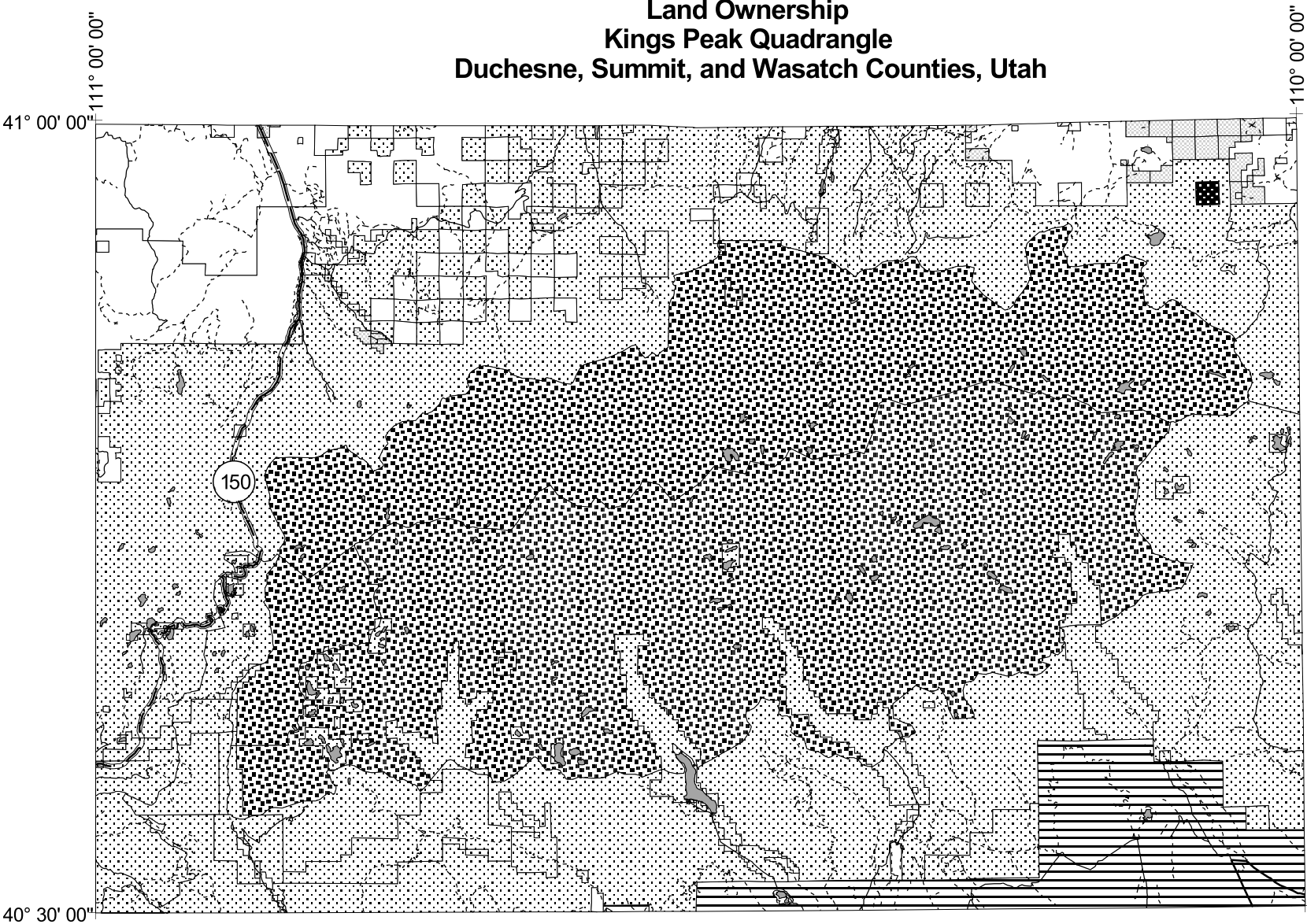
■ UWC 1996 inventory

+ Lat-Long tic

Energy and Mineral Locations Kings Peak Quadrangle Duchesne, Summit, and Wasatch Counties, Utah



Land Ownership Kings Peak Quadrangle Duchesne, Summit, and Wasatch Counties, Utah



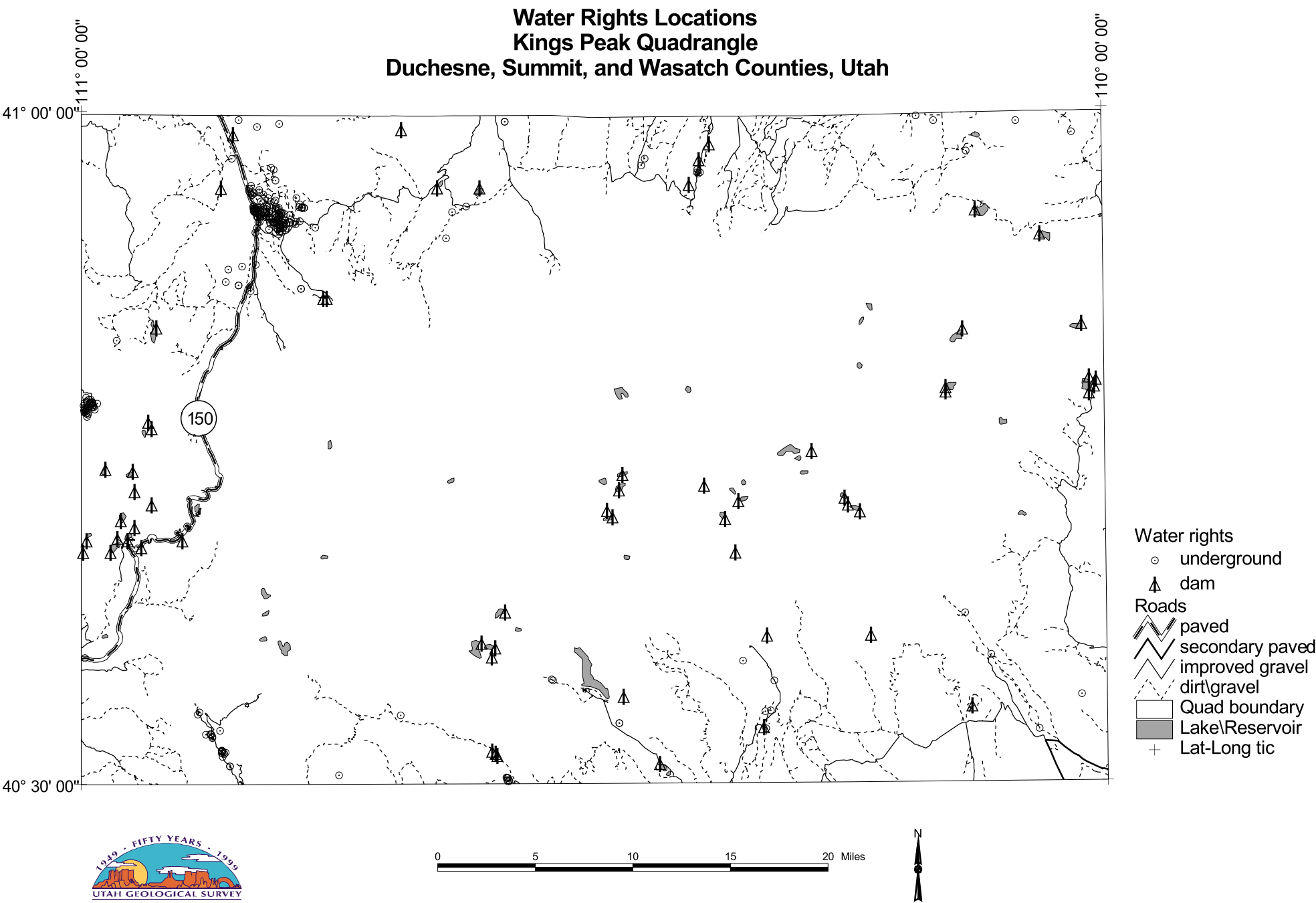
Roads

- paved
- secondary paved
- improved gravel
- dirt/gravel

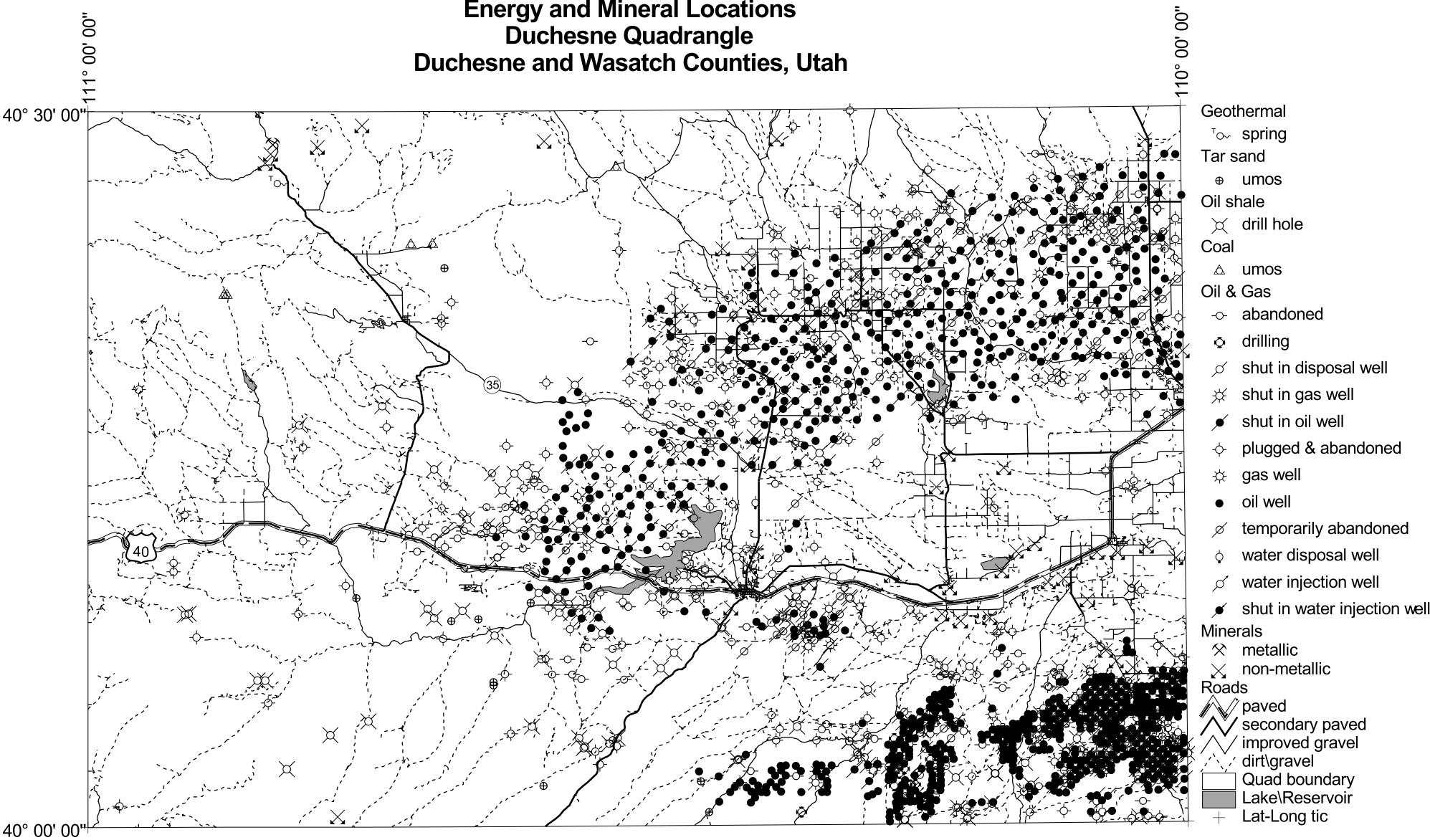
Land ownership

- Land to USA
- US Forest Service
- BLM
- State
- Native American
- Private
- Wilderness
- Water
- Intermittent water
- Lat-Long tic

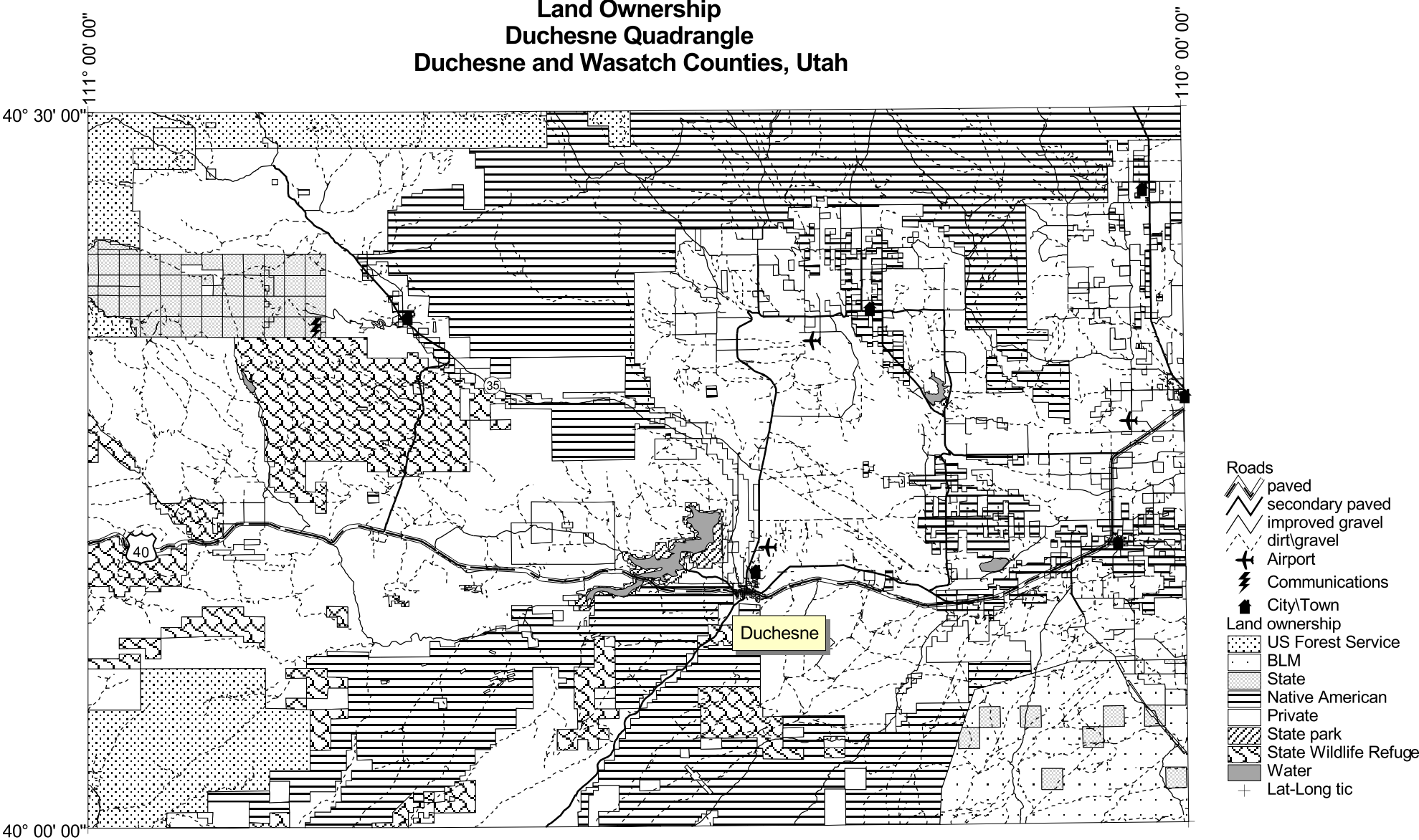
Water Rights Locations Kings Peak Quadrangle Duchesne, Summit, and Wasatch Counties, Utah



Energy and Mineral Locations Duchesne Quadrangle Duchesne and Wasatch Counties, Utah



Land Ownership Duchesne Quadrangle Duchesne and Wasatch Counties, Utah



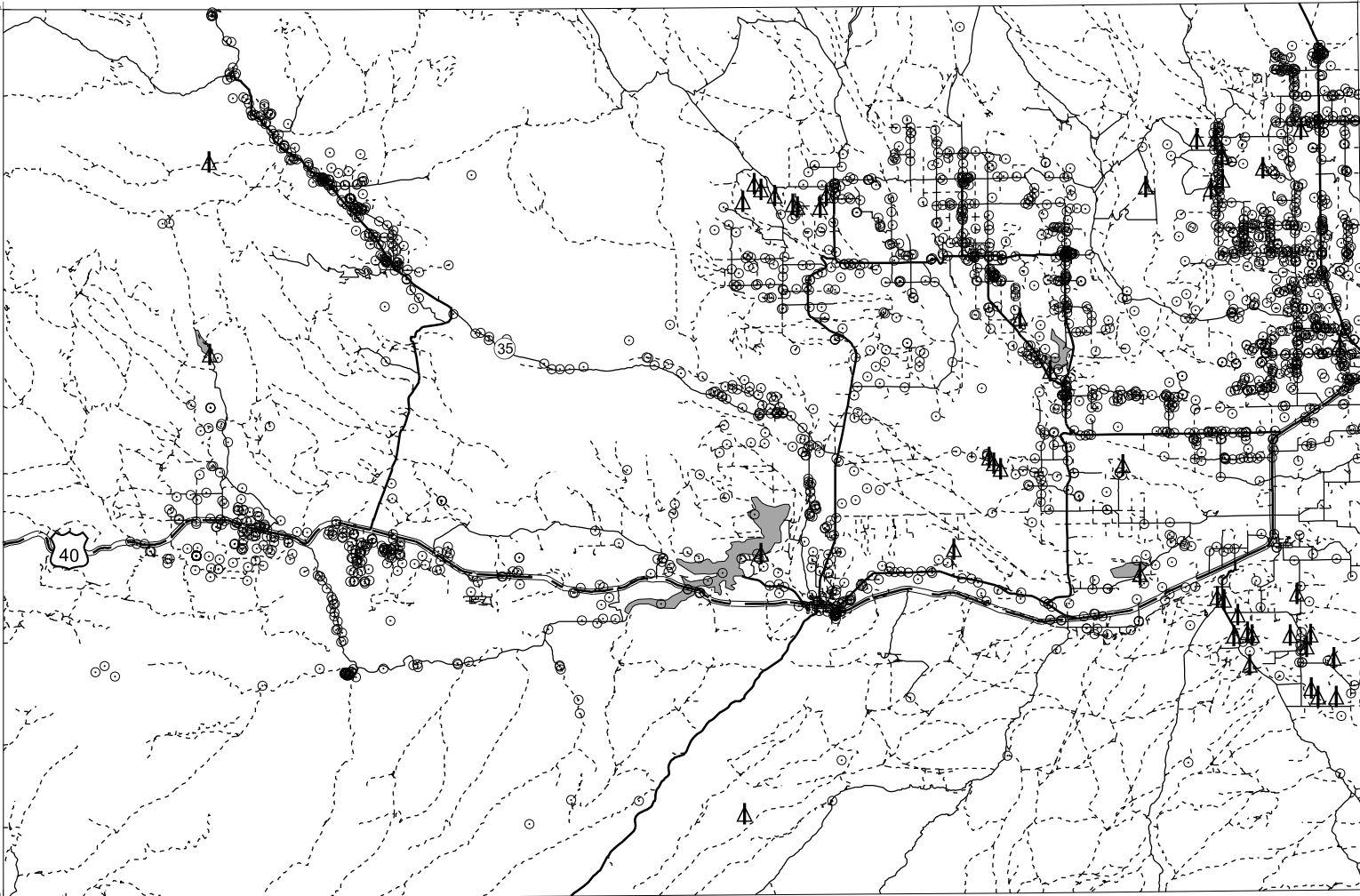
Water Rights Locations Duchesne Quadrangle Duchesne and Wasatch Counties, Utah

40° 30' 00"

111° 00' 00"

110° 00' 00"

40° 00' 00"



Water rights

○ underground

▲ dam

Roads

▬ paved

▬ secondary paved

▬ improved gravel

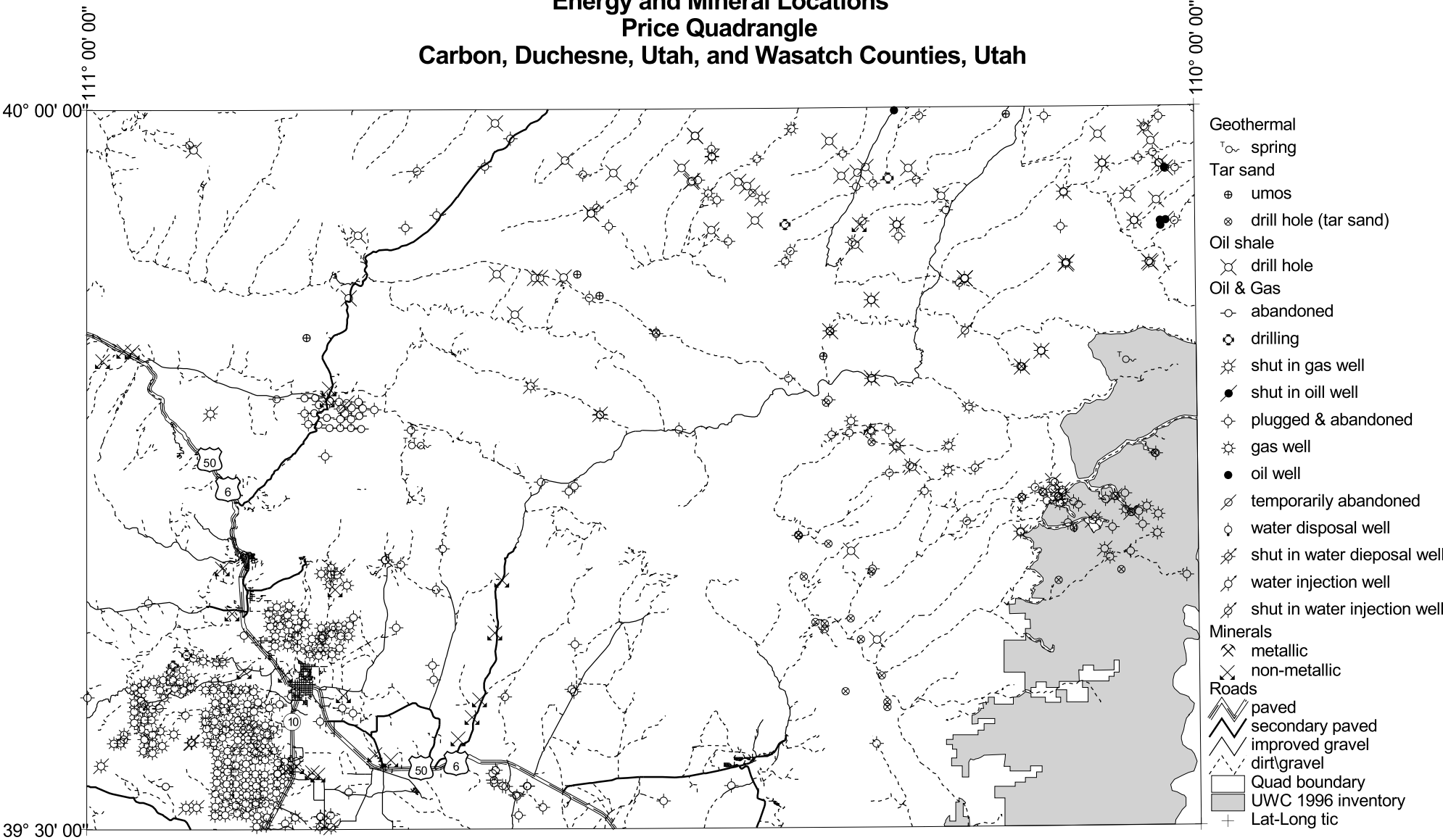
▬ dirt\gravel

□ Quad boundary

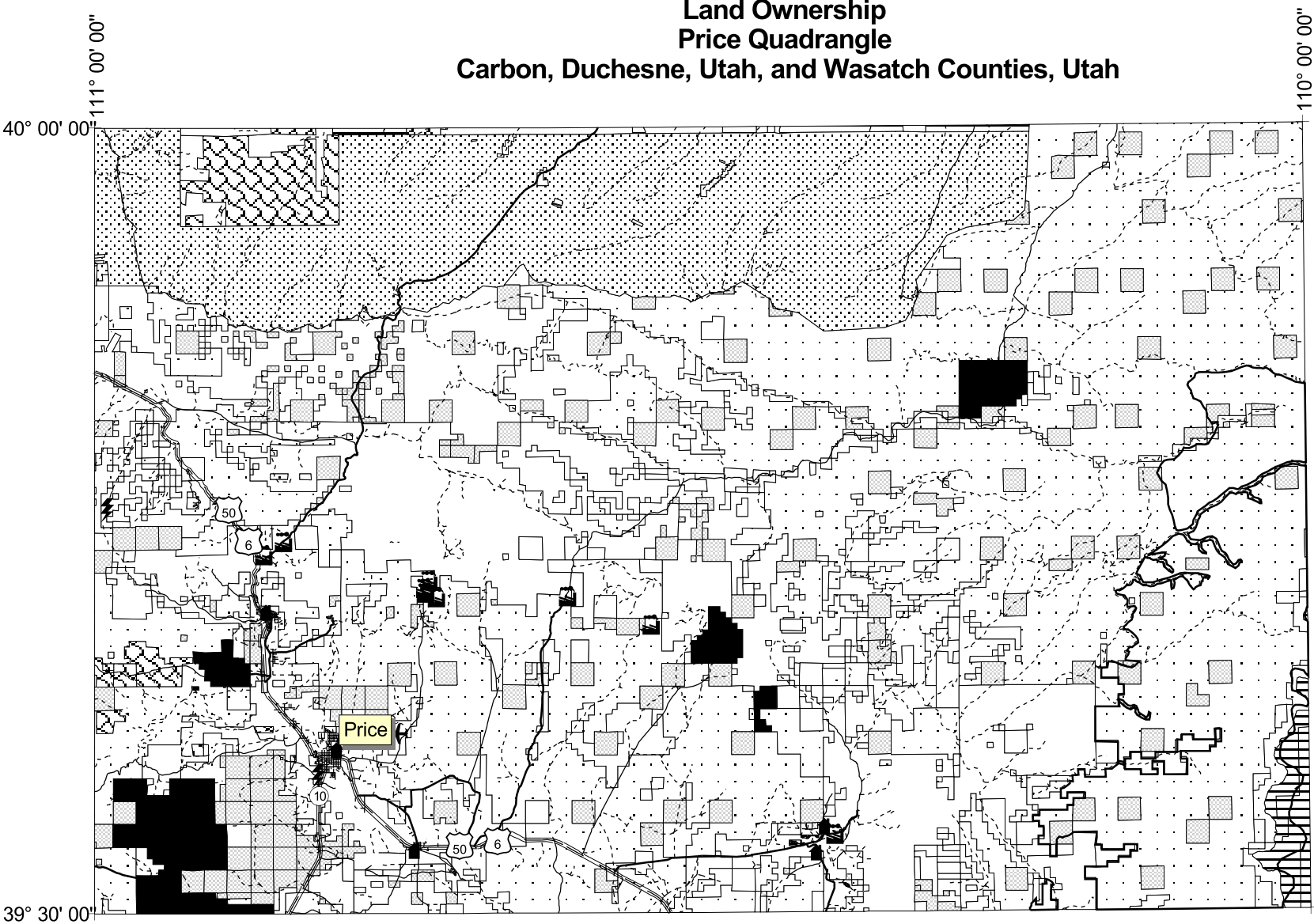
■ Lake\Reservoir

+ Lat-Long tic

Energy and Mineral Locations Price Quadrangle Carbon, Duchesne, Utah, and Wasatch Counties, Utah



Land Ownership Price Quadrangle Carbon, Duchesne, Utah, and Wasatch Counties, Utah



- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
- Airport**
- Communications**
- Power plant**
- City/Town**
- Land ownership**
- UWC 1996 inventory
 - Land to Utah
 - US Forest Service
 - BLM
 - State
 - Native American
 - Private
 - State Wildlife Refuge
- Lat-Long tic**

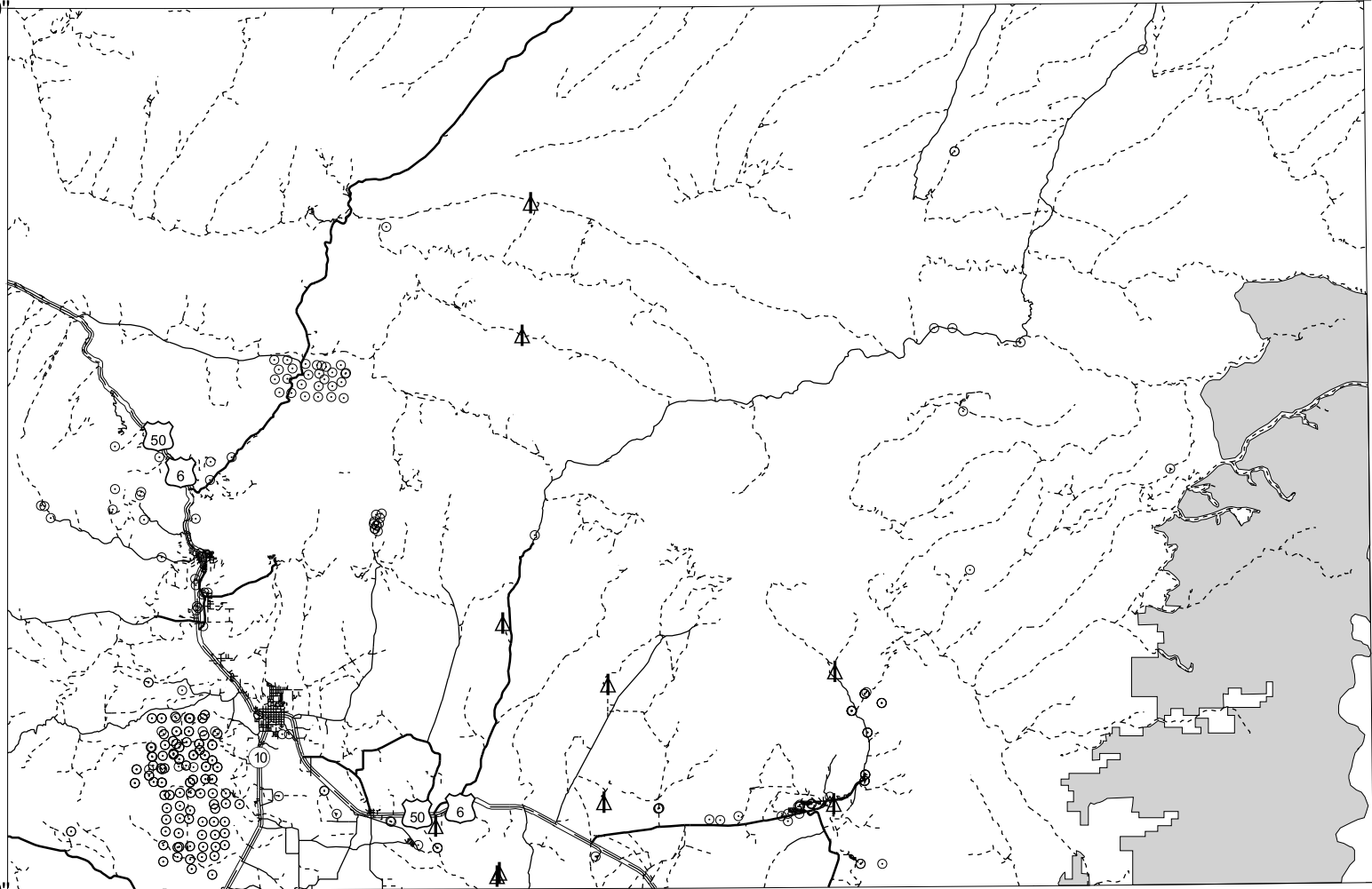
Water Rights Locations
Price Quadrangle
Carbon, Duchesne, Utah, and Wasatch Counties, Utah

40° 00' 00"

111° 00' 00"

110° 00' 00"

39° 30' 00"



Water rights

○ underground

▲ dam

Roads

≡ paved

≡ secondary paved

≡ improved gravel

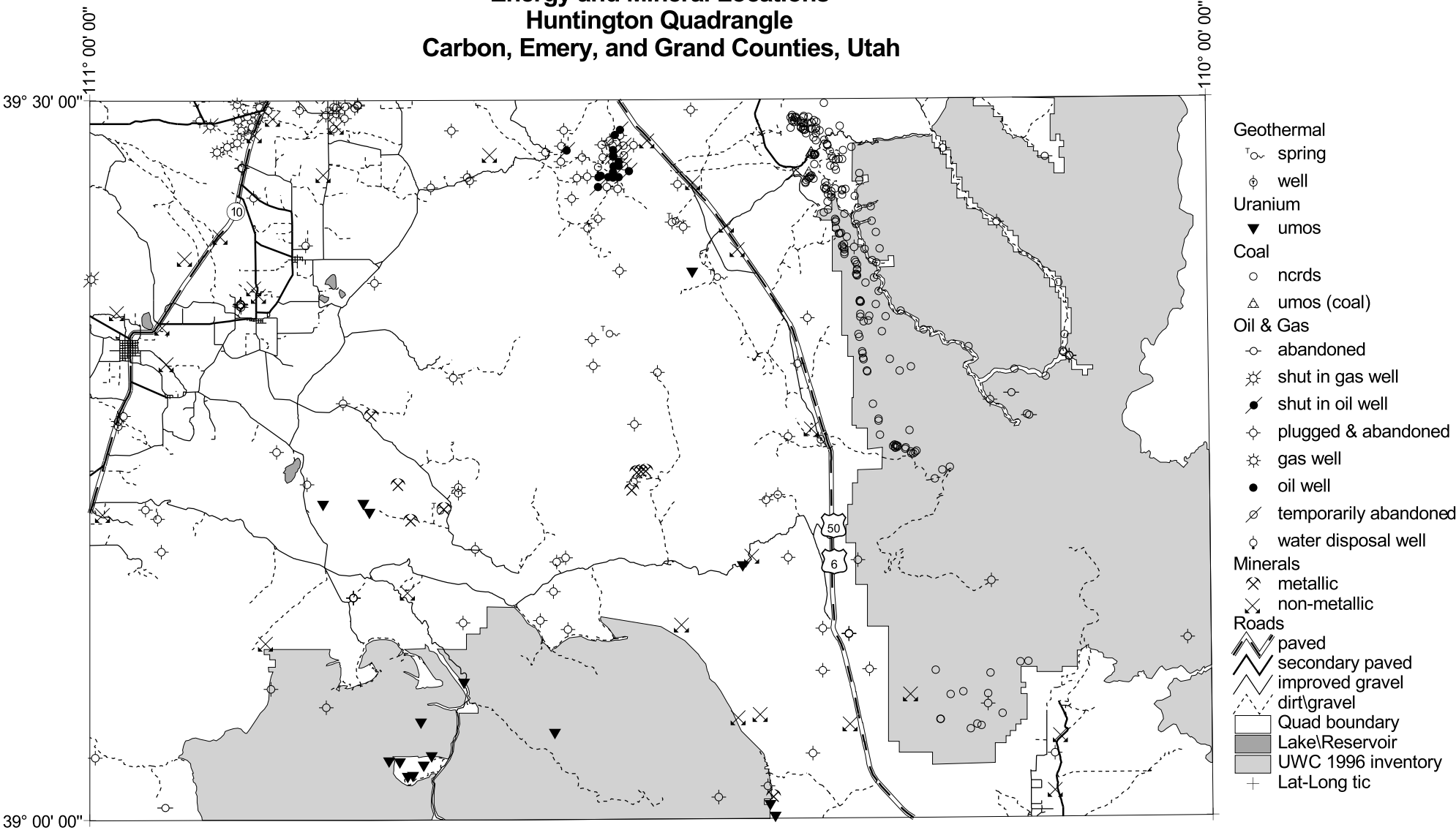
≡ dirt/gravel

□ Quad boundary

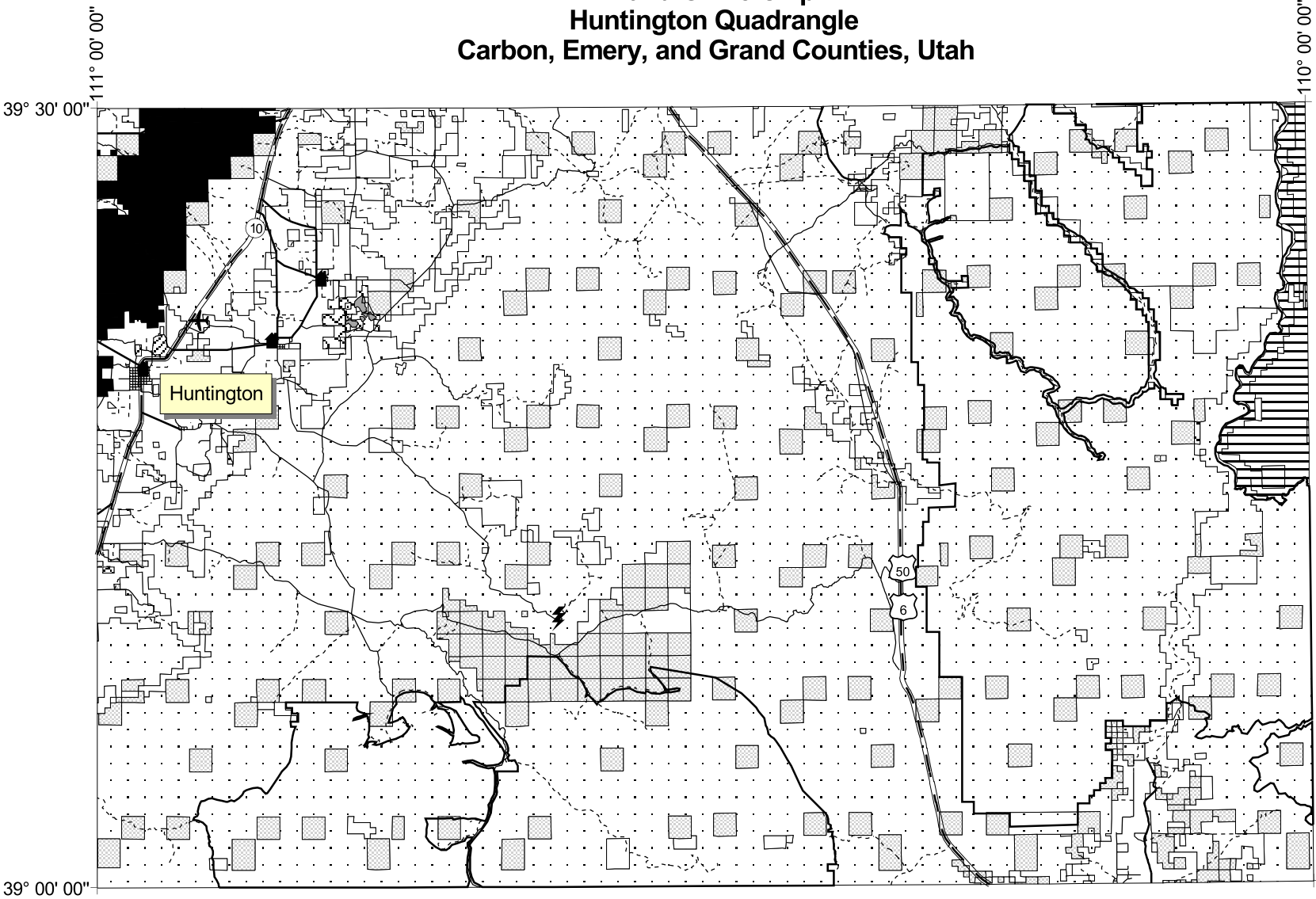
■ UWC 1996 inventory

+ Lat-Long tic

Energy and Mineral Locations Huntington Quadrangle Carbon, Emery, and Grand Counties, Utah

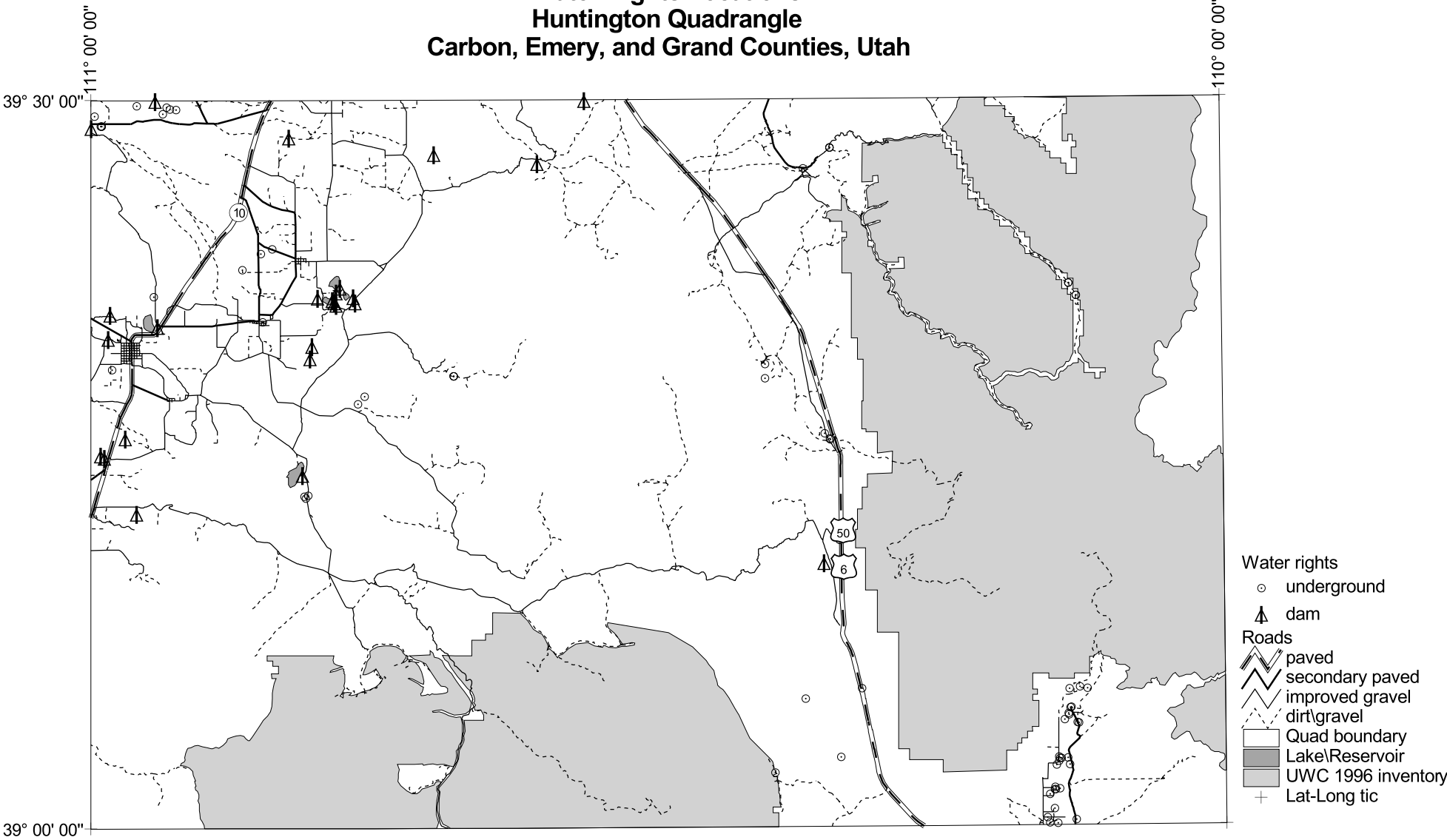


Land Ownership Huntington Quadrangle Carbon, Emery, and Grand Counties, Utah

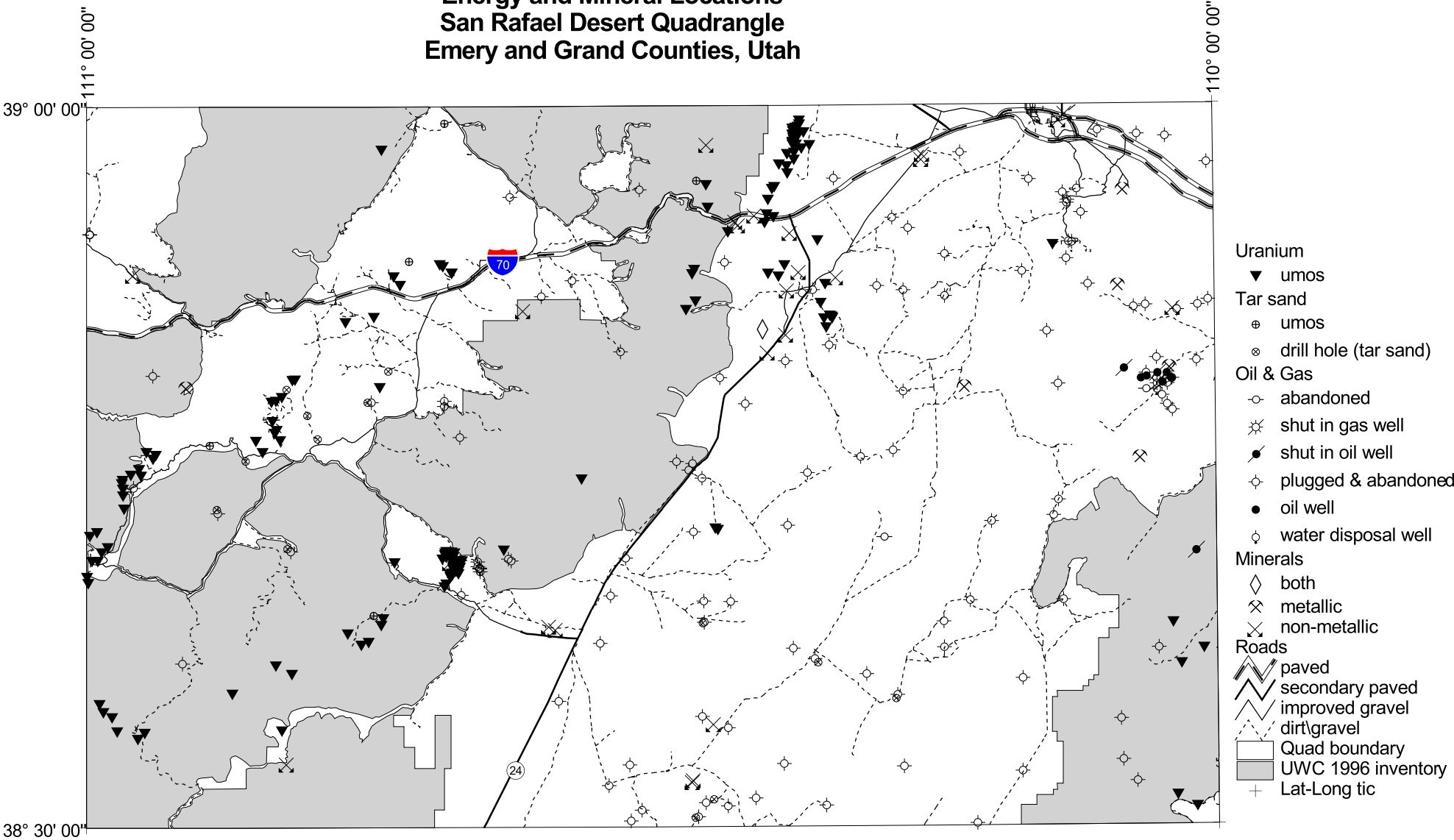


- Roads**
- paved
 - secondary paved
 - improved gravel
 - dirt/gravel
 - Airport
 - Communications
 - City/Town
- Land ownership**
- UWC 1996 inventory
 - Land to Utah
 - BLM
 - State
 - Native American
 - Private
 - State Park
 - State Wildlife Refuge
 - Water
 - Lat-Long tic

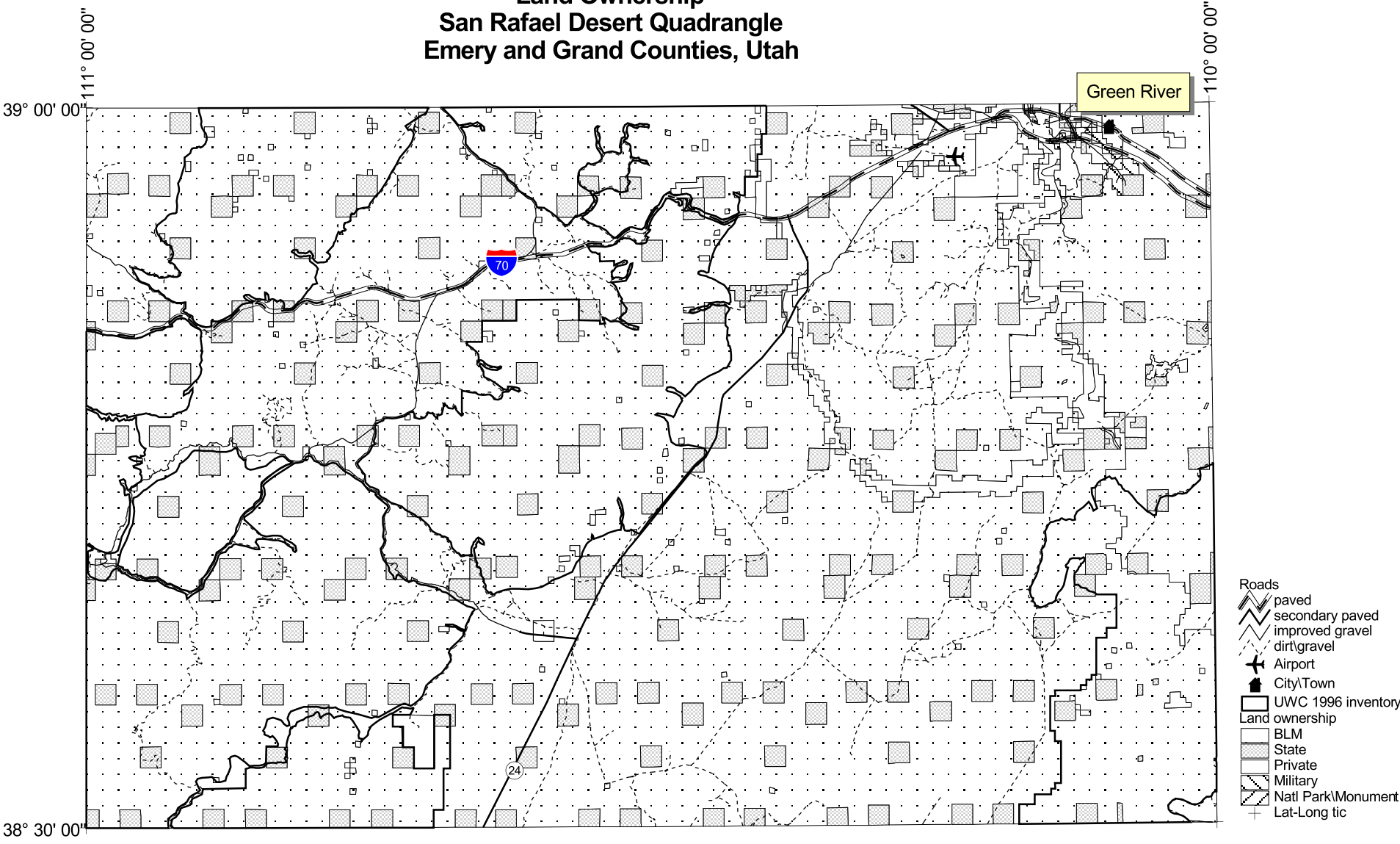
Water Rights Locations Huntington Quadrangle Carbon, Emery, and Grand Counties, Utah



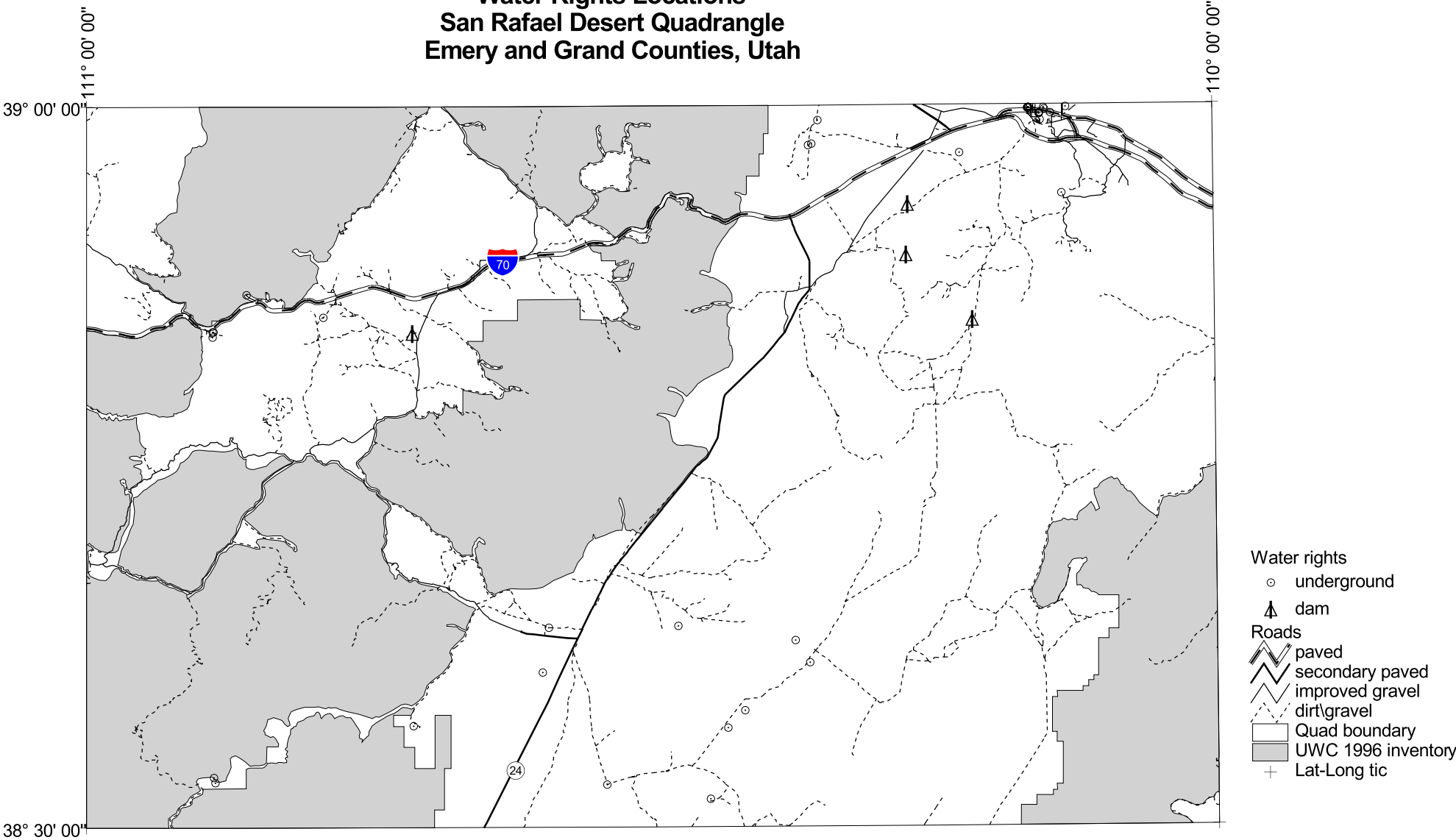
Energy and Mineral Locations San Rafael Desert Quadrangle Emery and Grand Counties, Utah



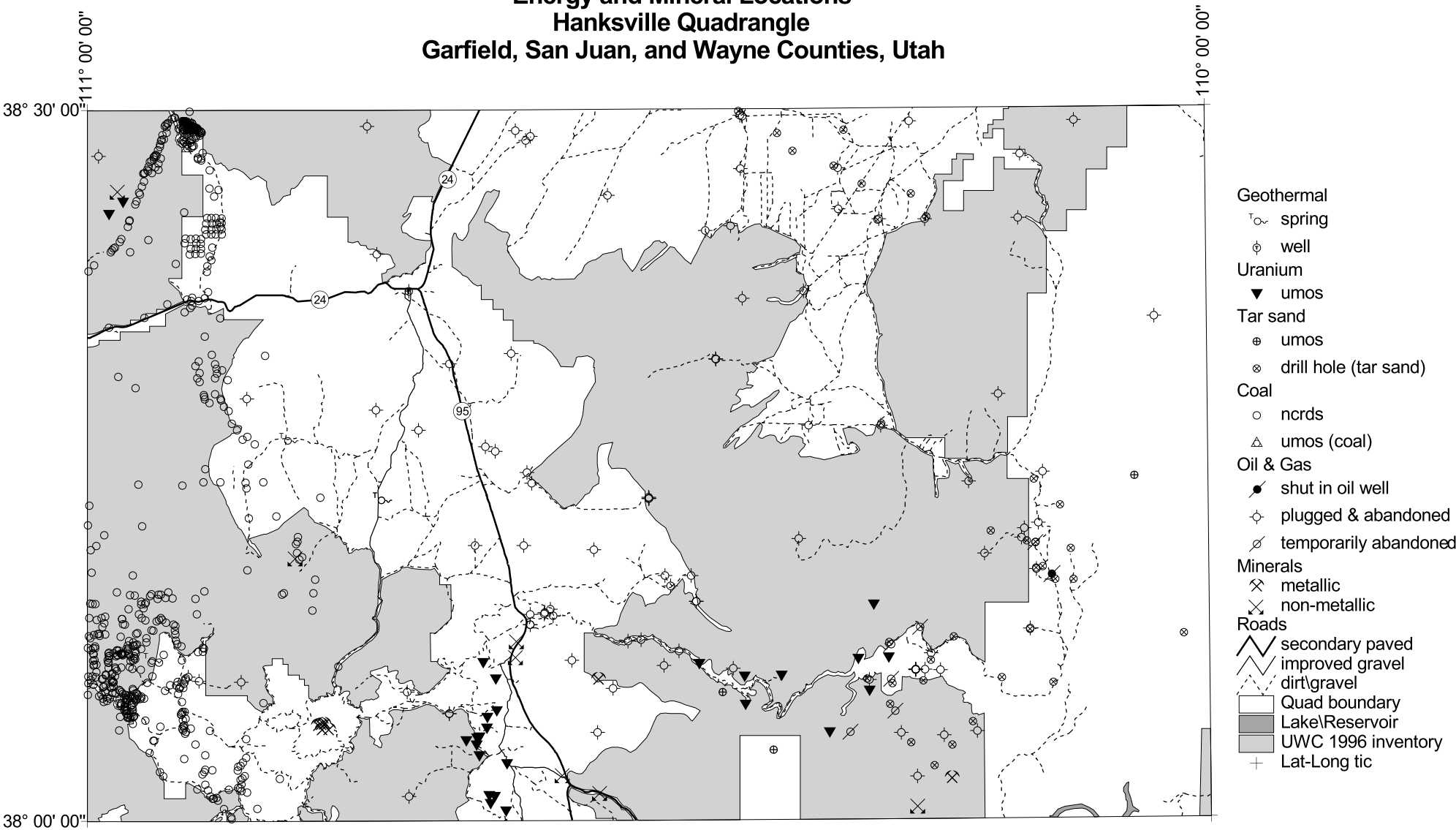
Land Ownership San Rafael Desert Quadrangle Emery and Grand Counties, Utah



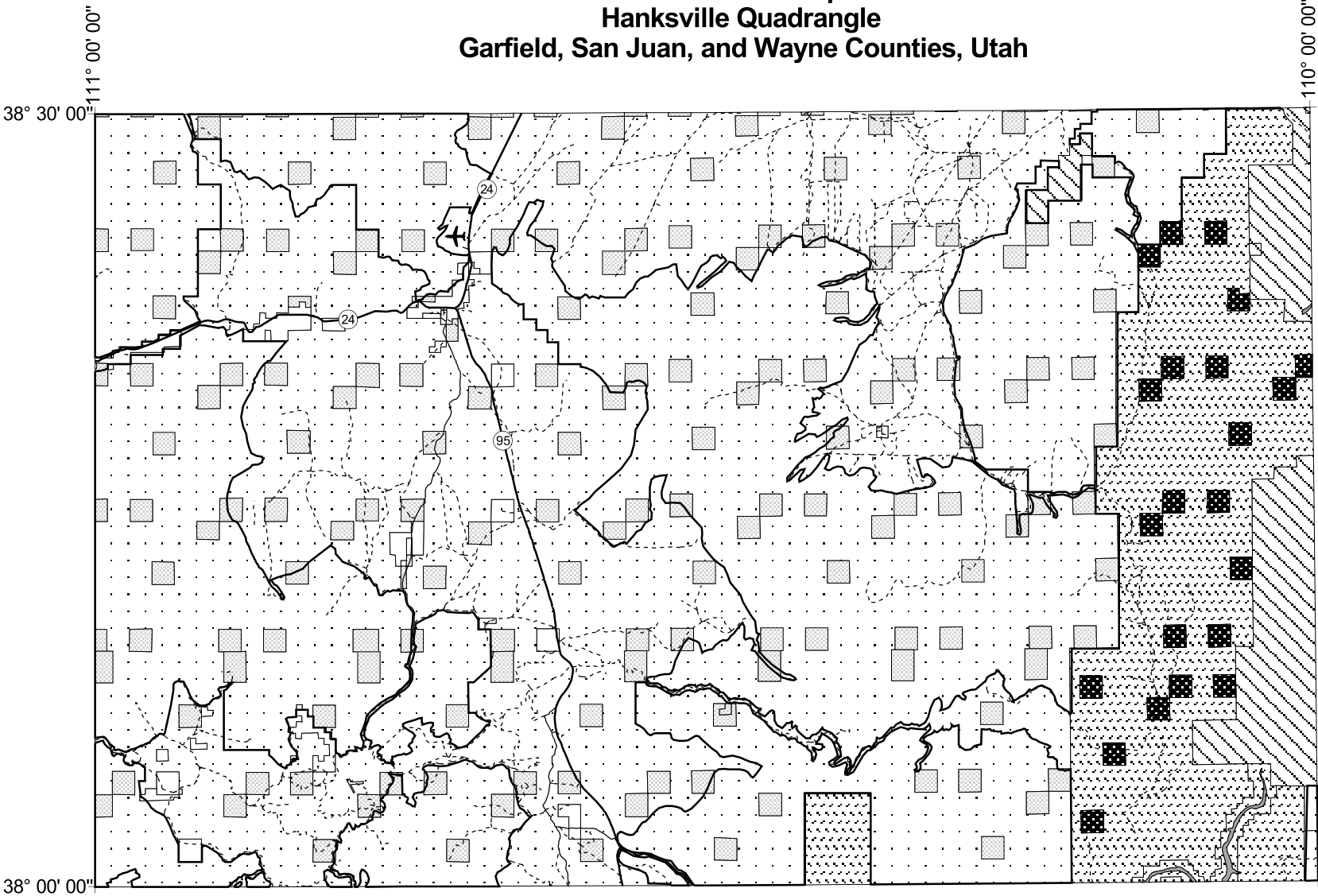
Water Rights Locations San Rafael Desert Quadrangle Emery and Grand Counties, Utah



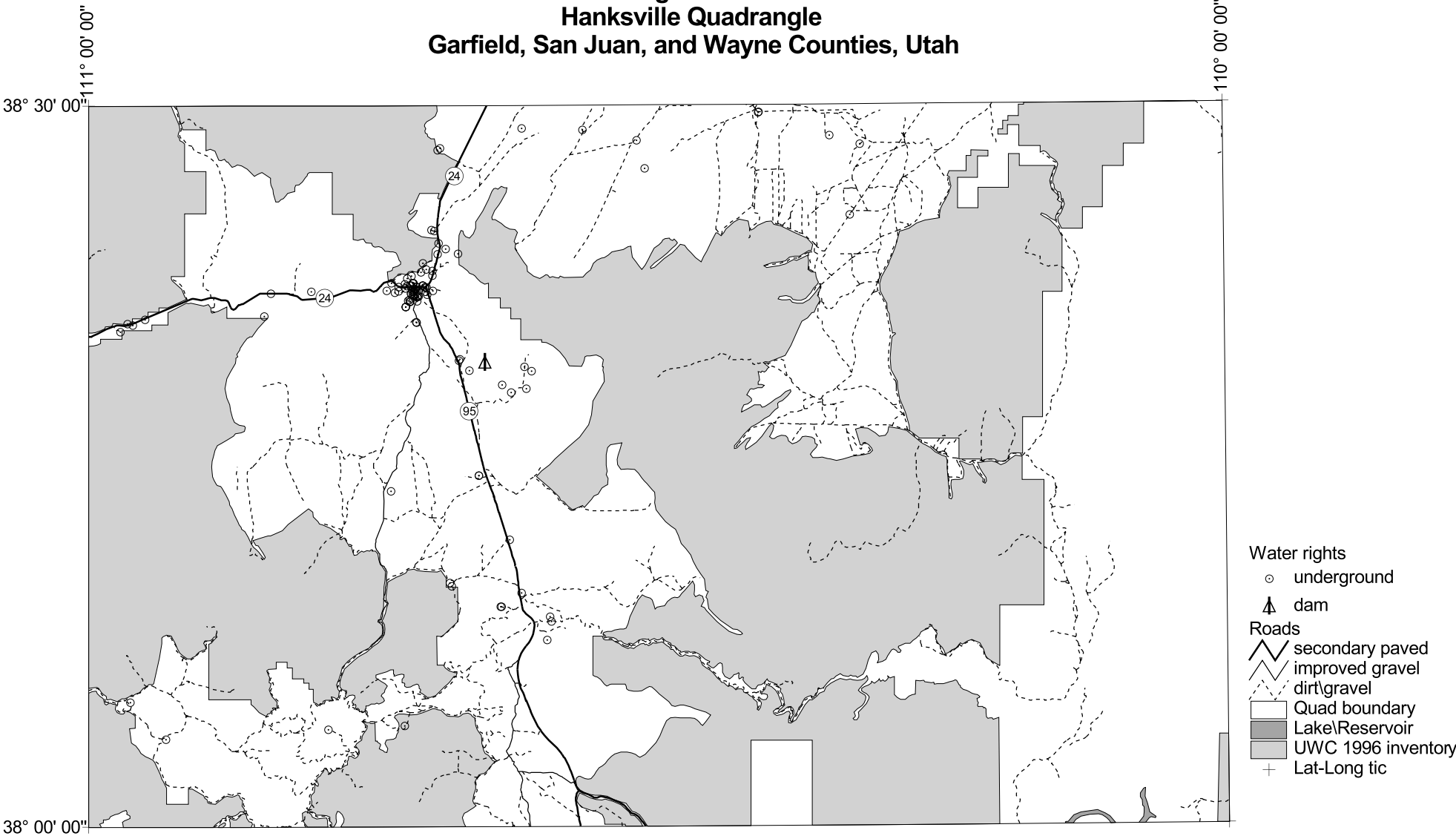
Energy and Mineral Locations Hanksville Quadrangle Garfield, San Juan, and Wayne Counties, Utah



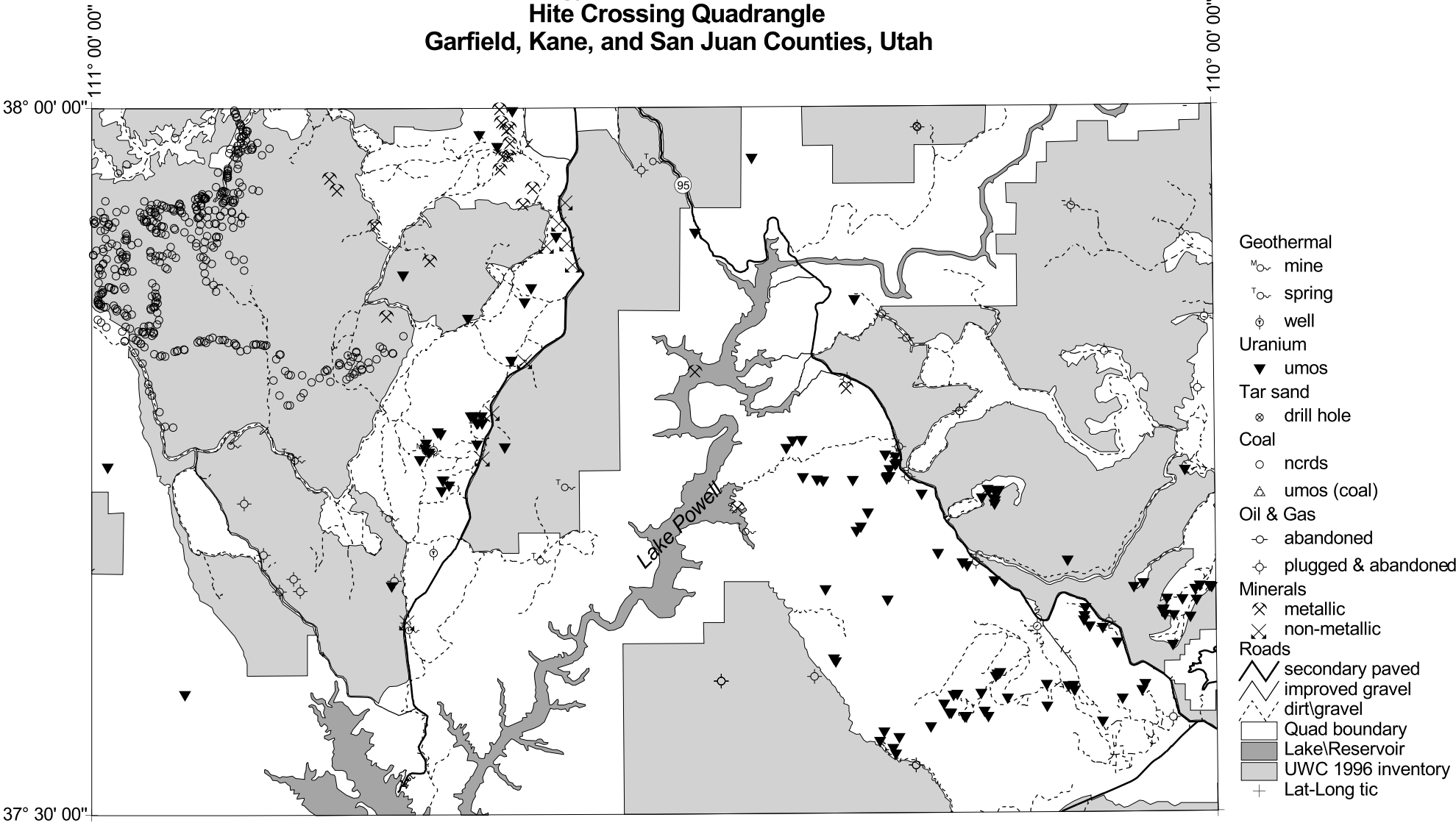
Land Ownership Hanksville Quadrangle Garfield, San Juan, and Wayne Counties, Utah



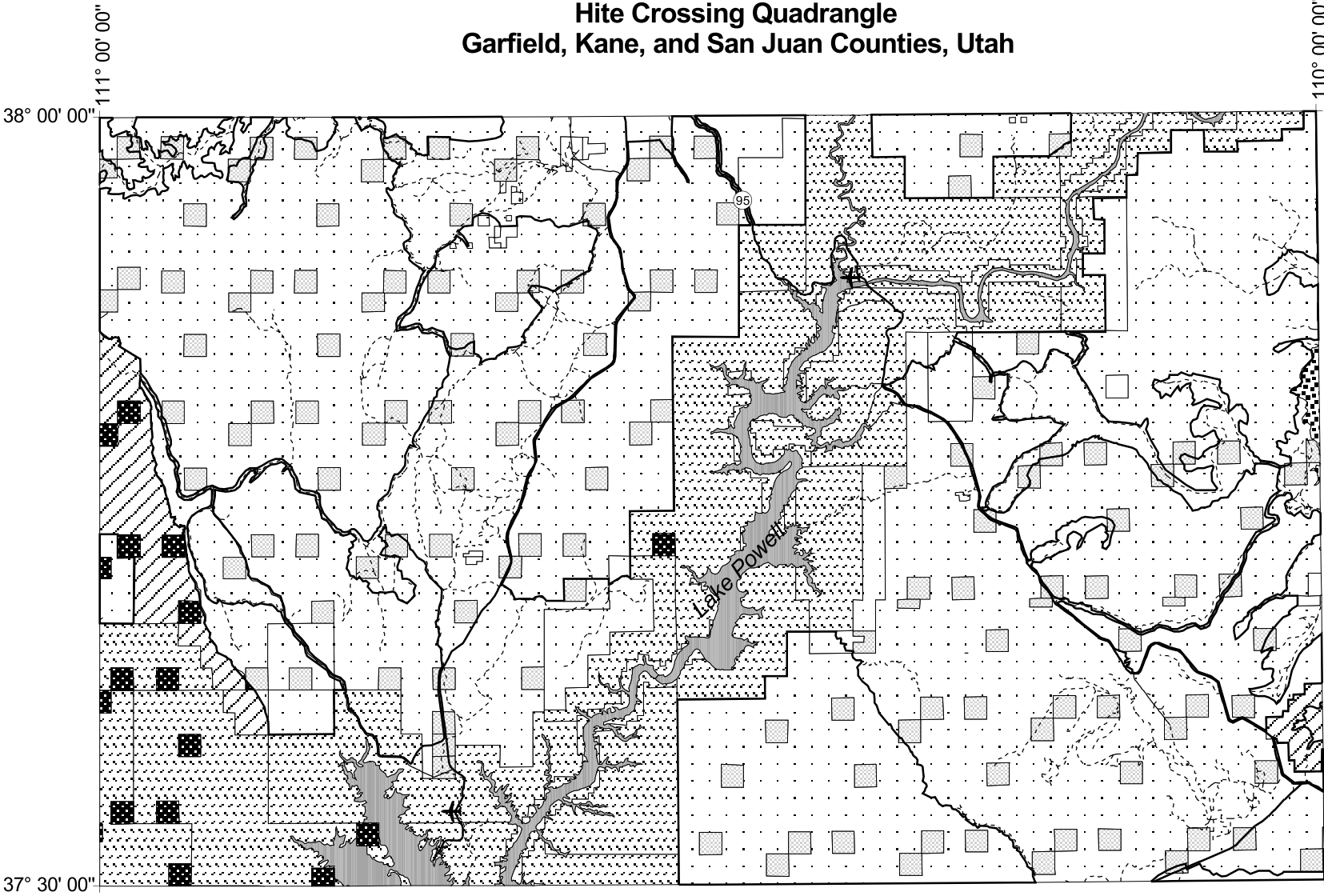
Water Rights Locations Hanksville Quadrangle Garfield, San Juan, and Wayne Counties, Utah



Energy and Mineral Locations Hite Crossing Quadrangle Garfield, Kane, and San Juan Counties, Utah



Land Ownership Hite Crossing Quadrangle Garfield, Kane, and San Juan Counties, Utah



Roads

- secondary paved
- improved gravel
- dirt/gravel

Airport

UWC 1996 inventory

Land to USA
Land ownership

BLM

State

Private

Natl Park/Monument

Natl Rec Area

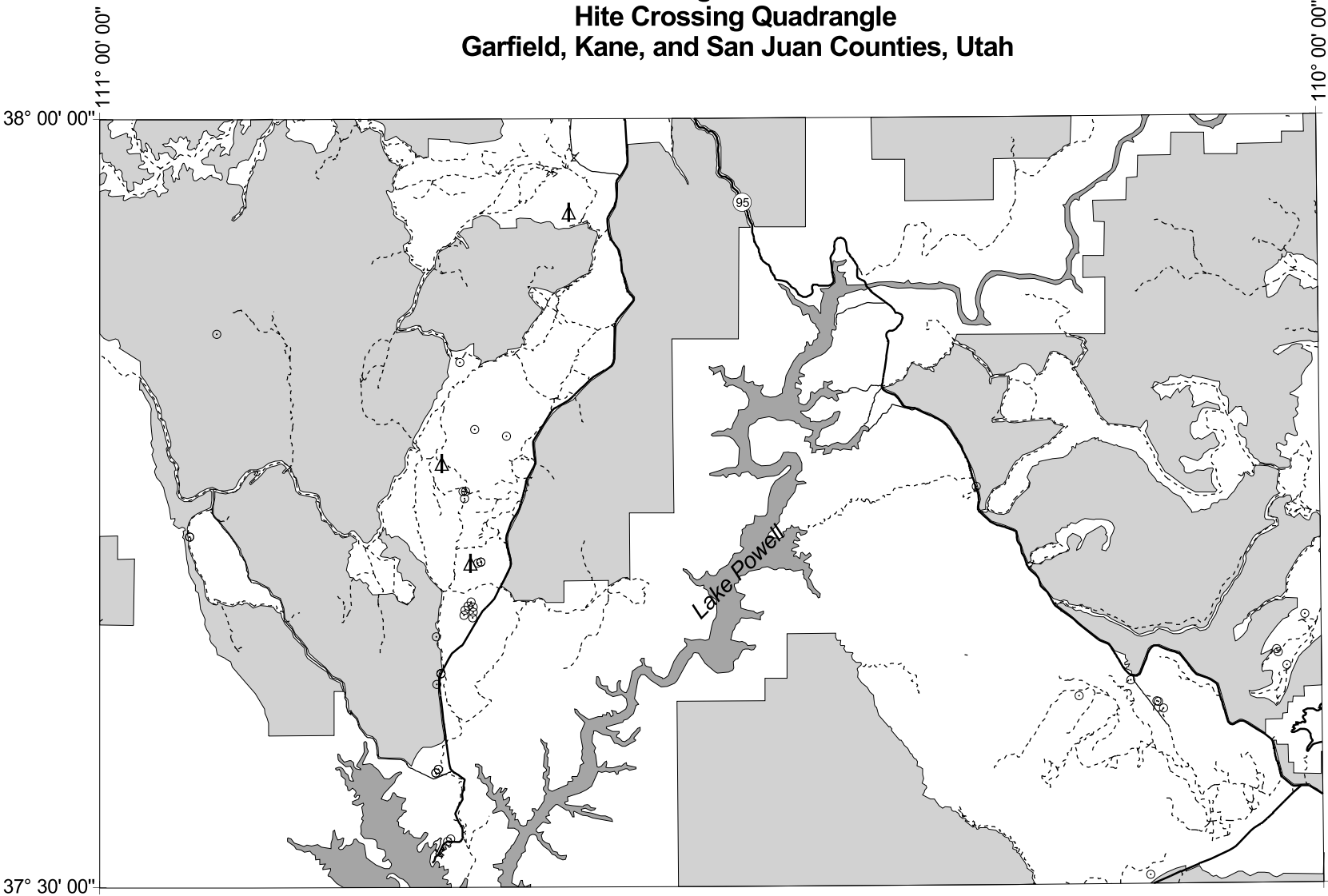
Wilderness

Water

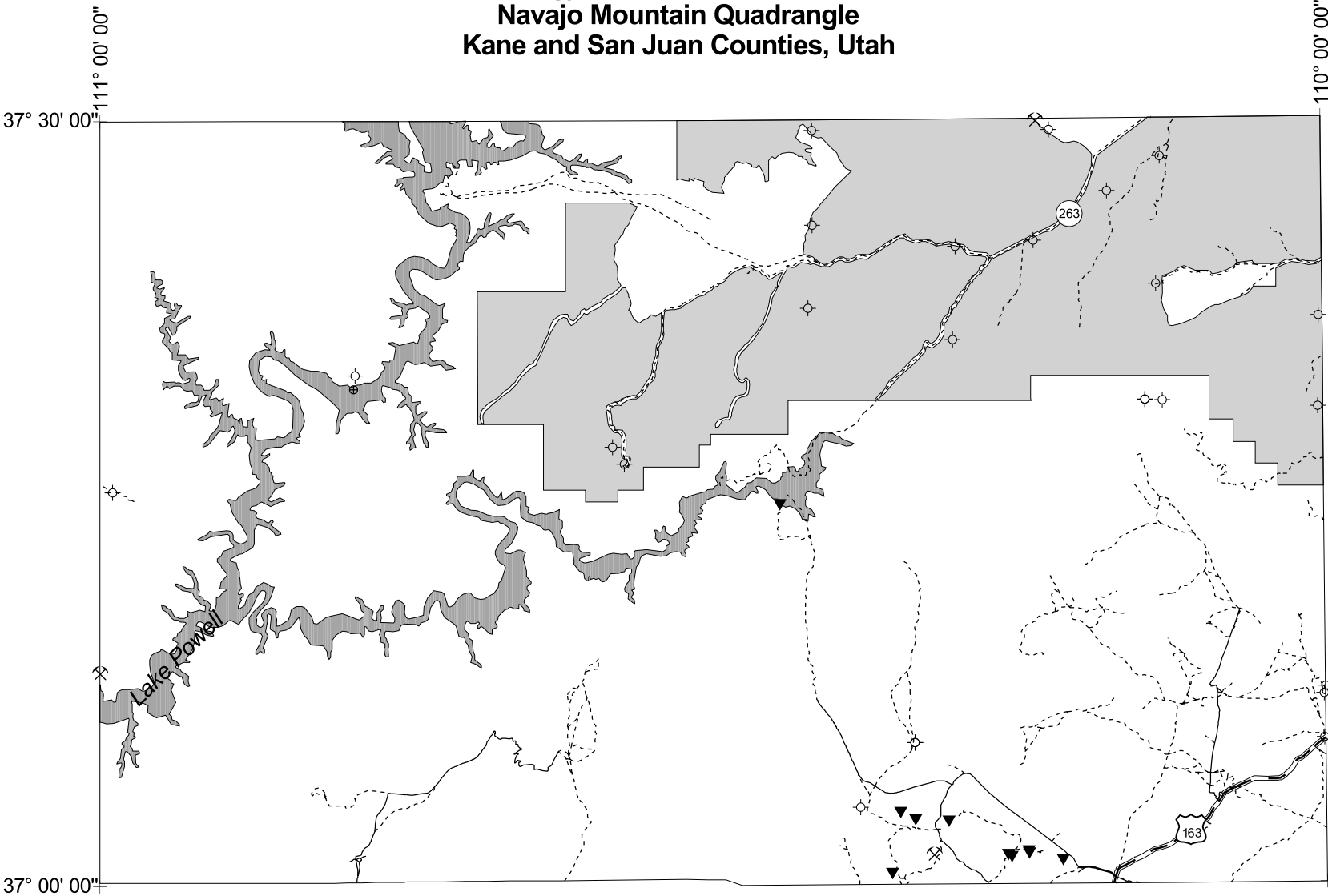
Lat-Long tic



Water Rights Locations Hite Crossing Quadrangle Garfield, Kane, and San Juan Counties, Utah

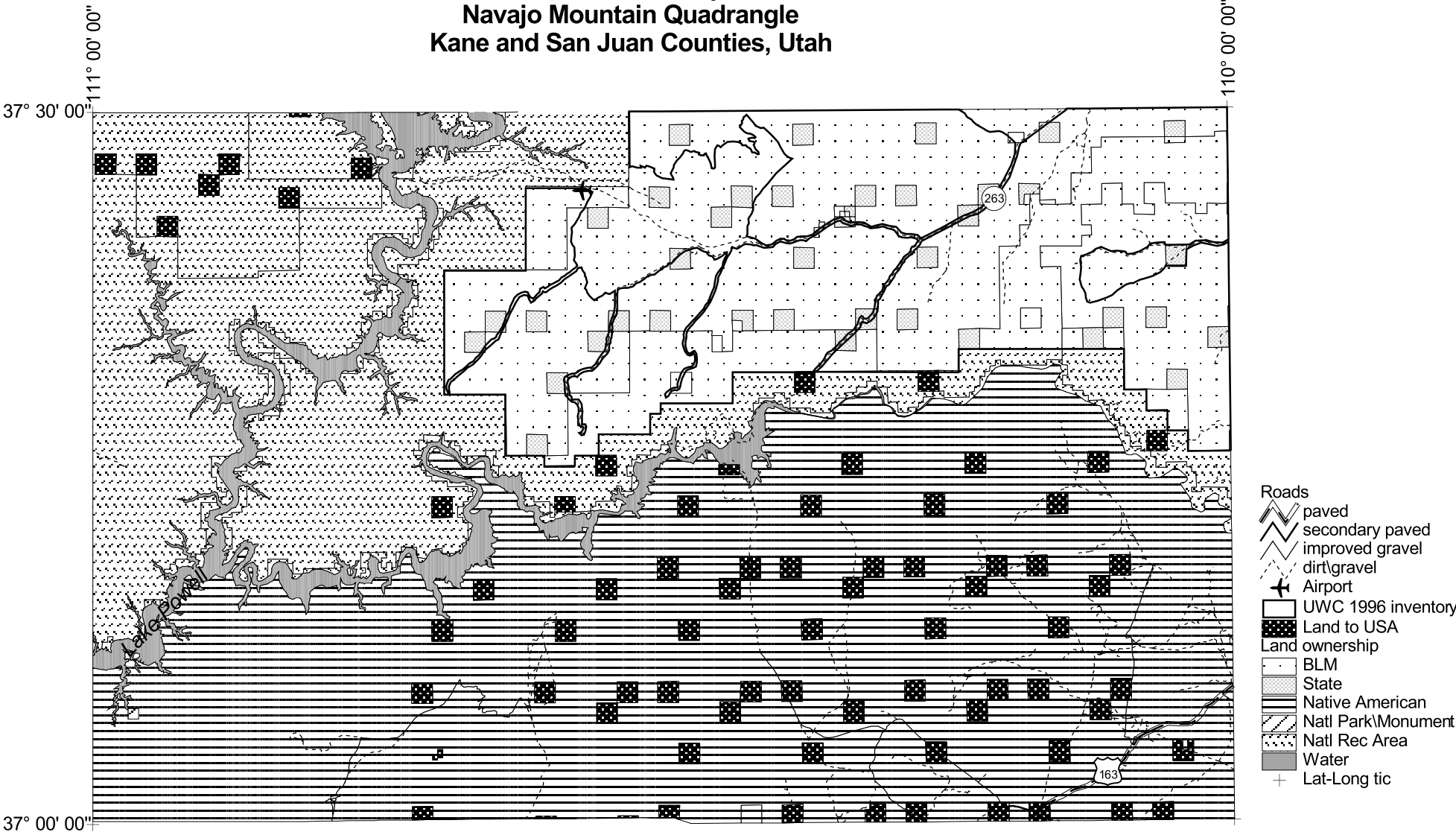


Energy and Mineral Locations Navajo Mountain Quadrangle Kane and San Juan Counties, Utah

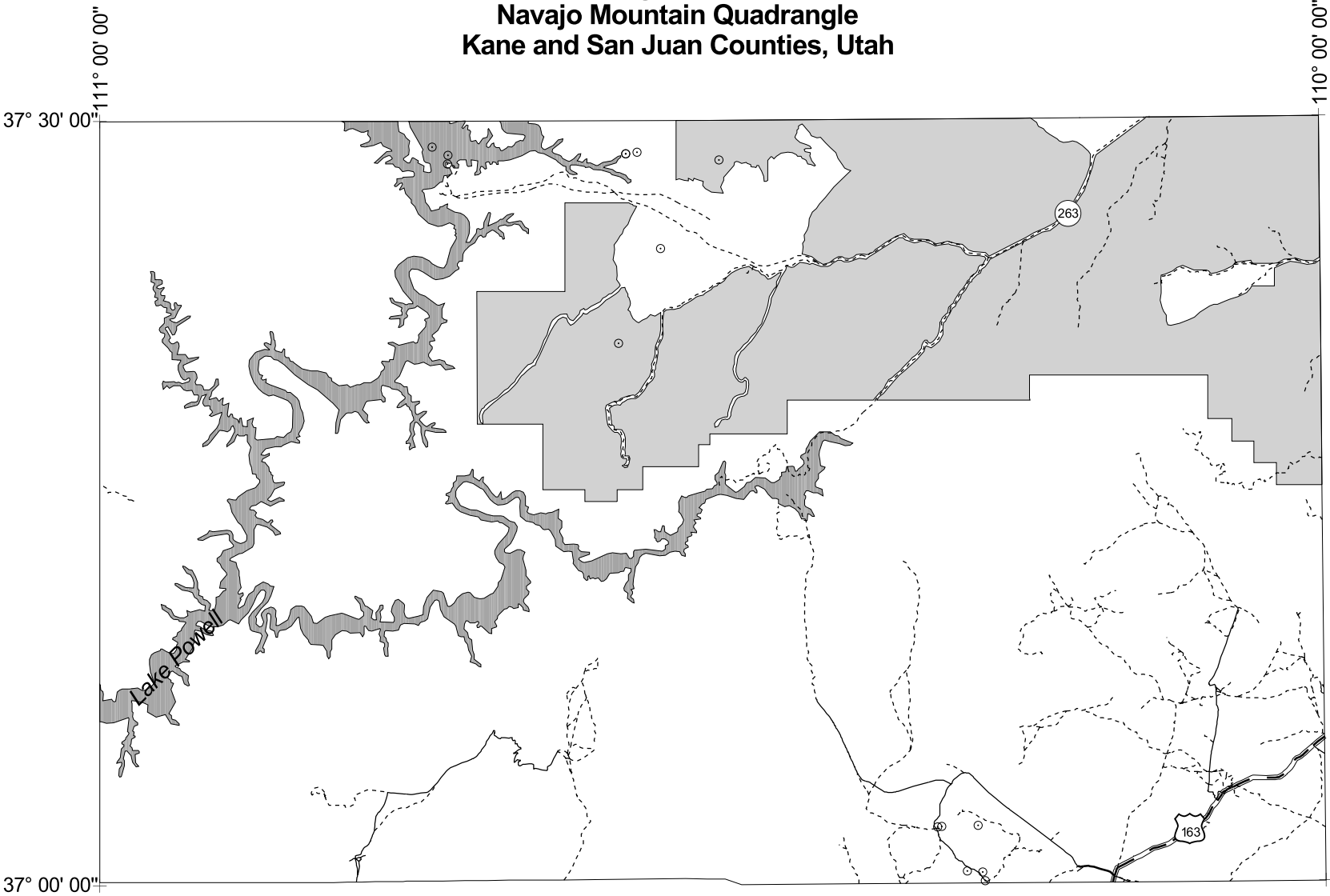


- Uranium
 - ▼ umos
- Tar sand
 - ⊕ umos
- Oil & Gas
 - ⊙ plugged & abandoned
- Minerals
 - ⊗ metallic
- Roads
 - ▬ paved
 - ▬ secondary paved
 - ▬ improved gravel
 - ▬ dirt/gravel
- Quad boundary
 - ▬
- Lake/Reservoir
 - ▬
- UWC 1996 inventory
 - ▬
- Lat-Long tic
 - +

Land Ownership Navajo Mountain Quadrangle Kane and San Juan Counties, Utah



Water Rights Locations Navajo Mountain Quadrangle Kane and San Juan Counties, Utah



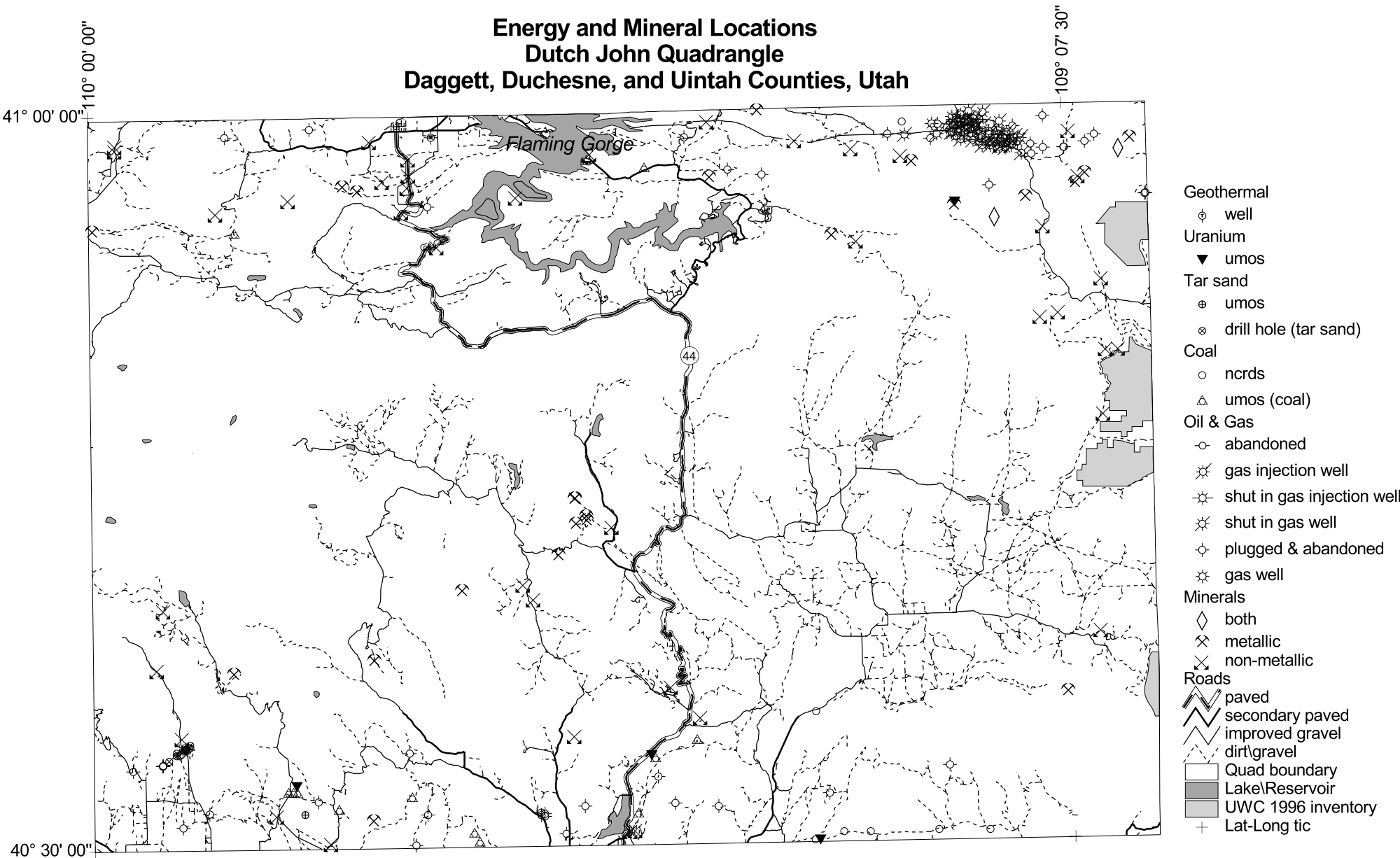
Water rights

- underground

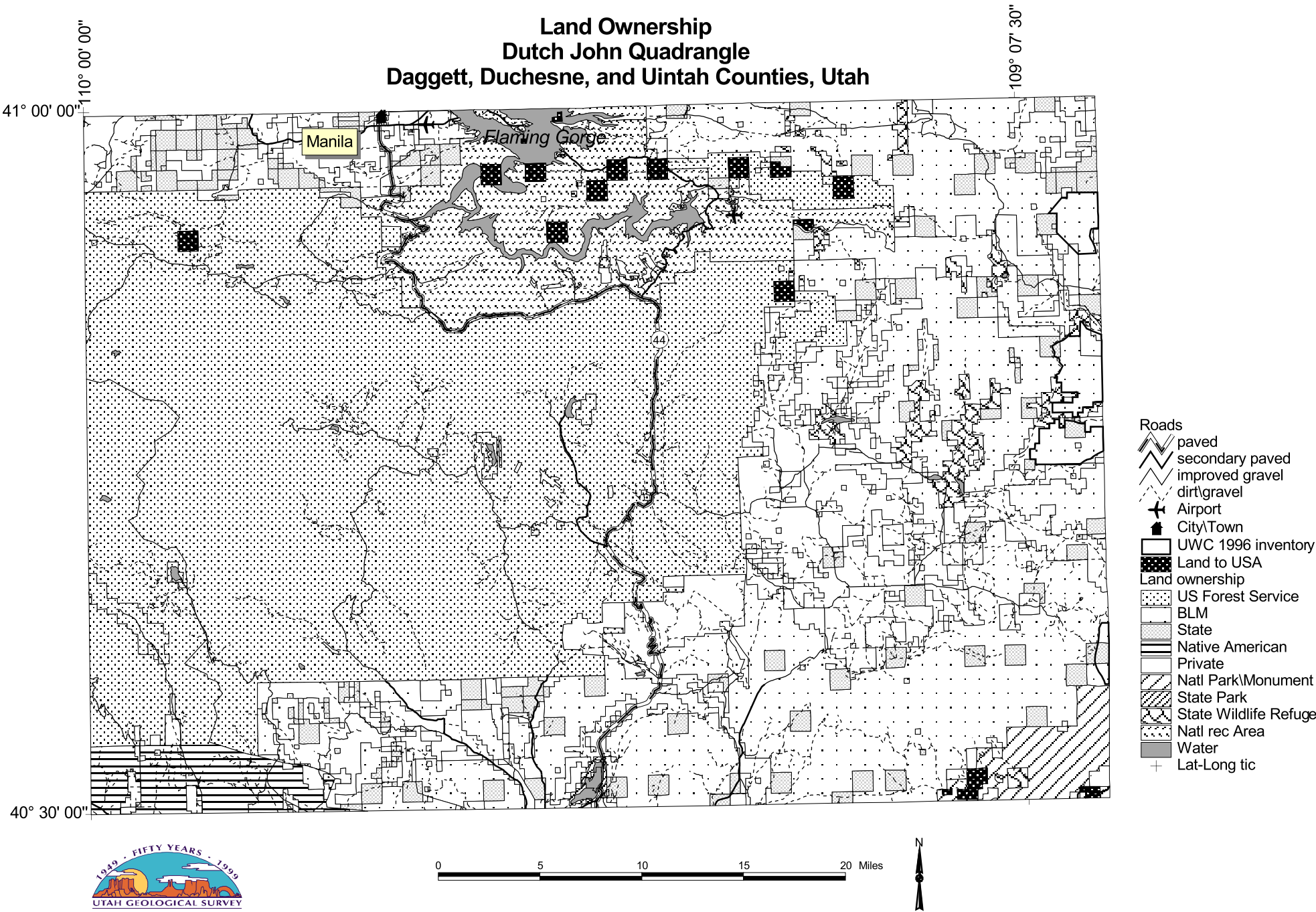
Roads

- paved
- secondary paved
- improved gravel
- dirt\gravel
- Quad boundary
- Lake\Reservoir
- UWC 1996 inventory
- + Lat-Long tic

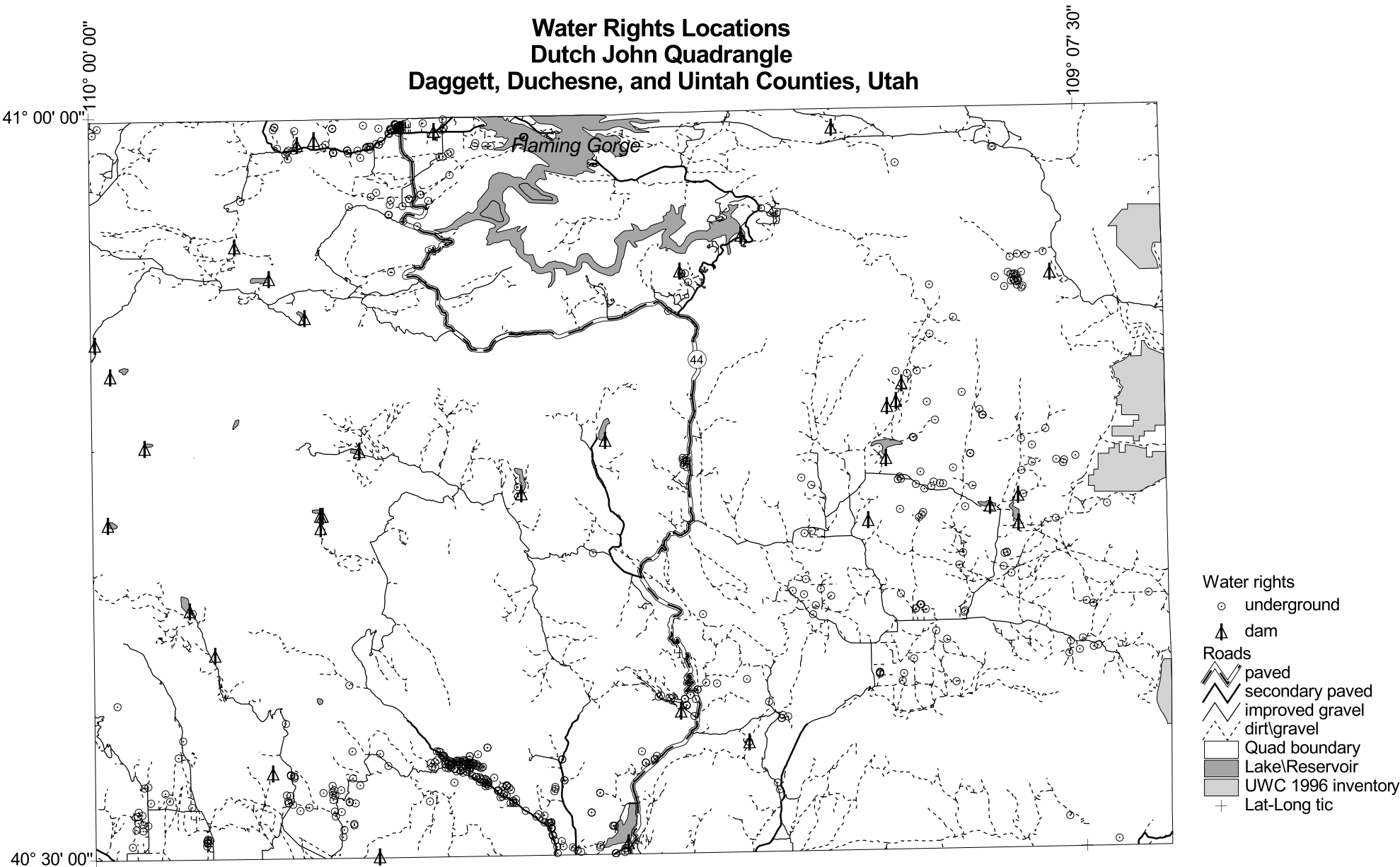
Energy and Mineral Locations Dutch John Quadrangle Daggett, Duchesne, and Uintah Counties, Utah



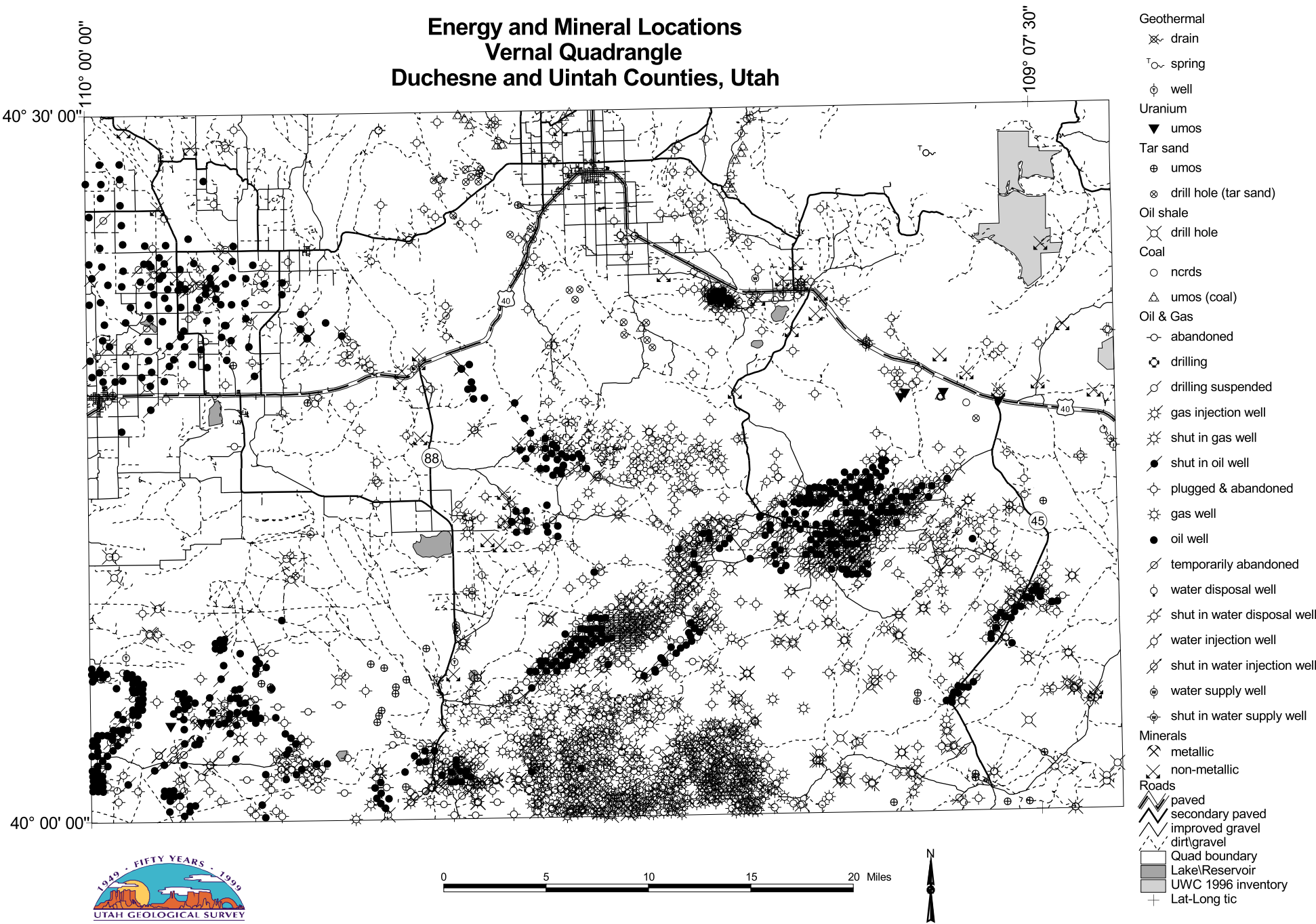
Land Ownership Dutch John Quadrangle Daggett, Duchesne, and Uintah Counties, Utah



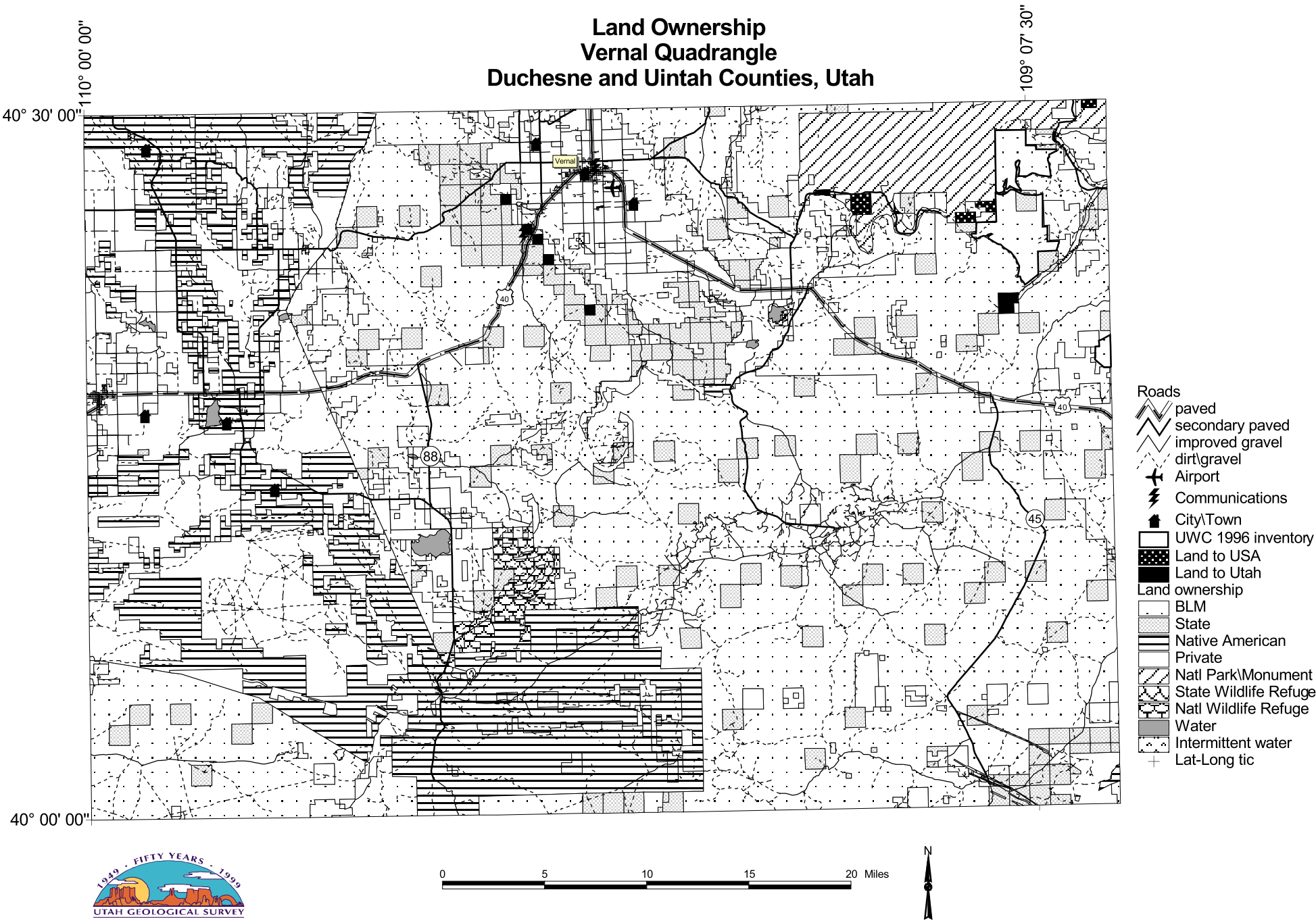
Water Rights Locations
Dutch John Quadrangle
Daggett, Duchesne, and Uintah Counties, Utah



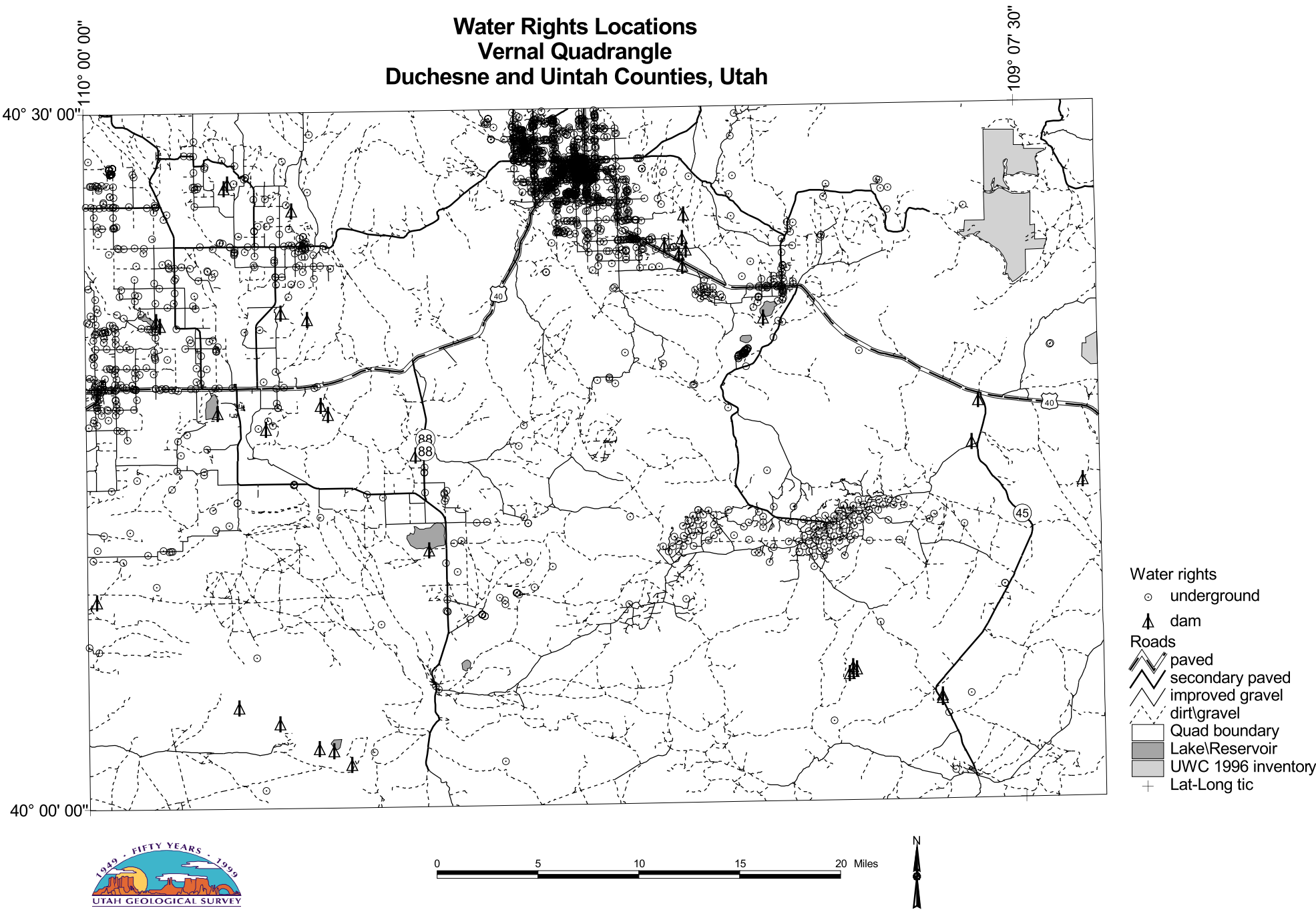
Energy and Mineral Locations Vernal Quadrangle Duchesne and Uintah Counties, Utah



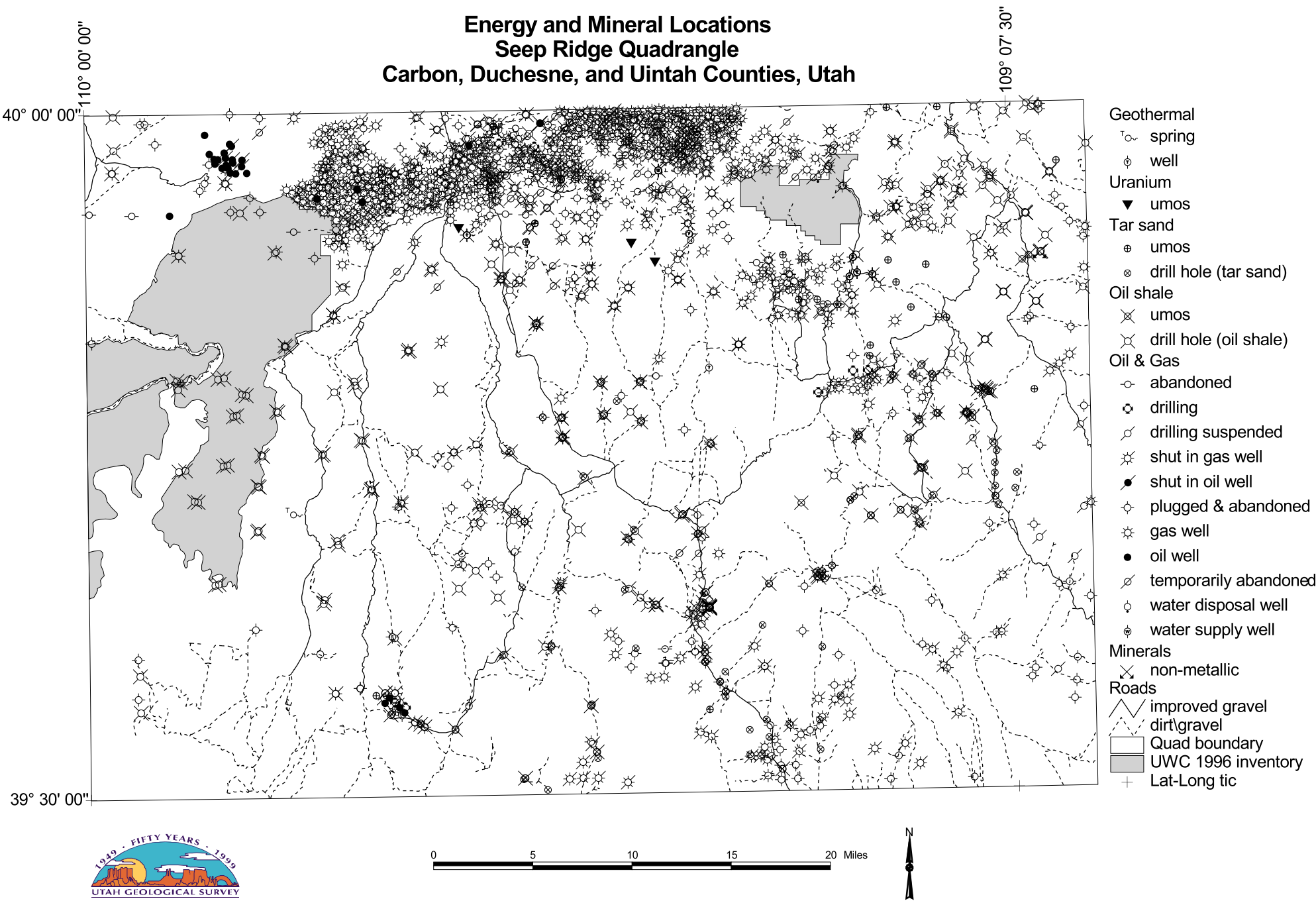
Land Ownership Vernal Quadrangle Duchesne and Uintah Counties, Utah



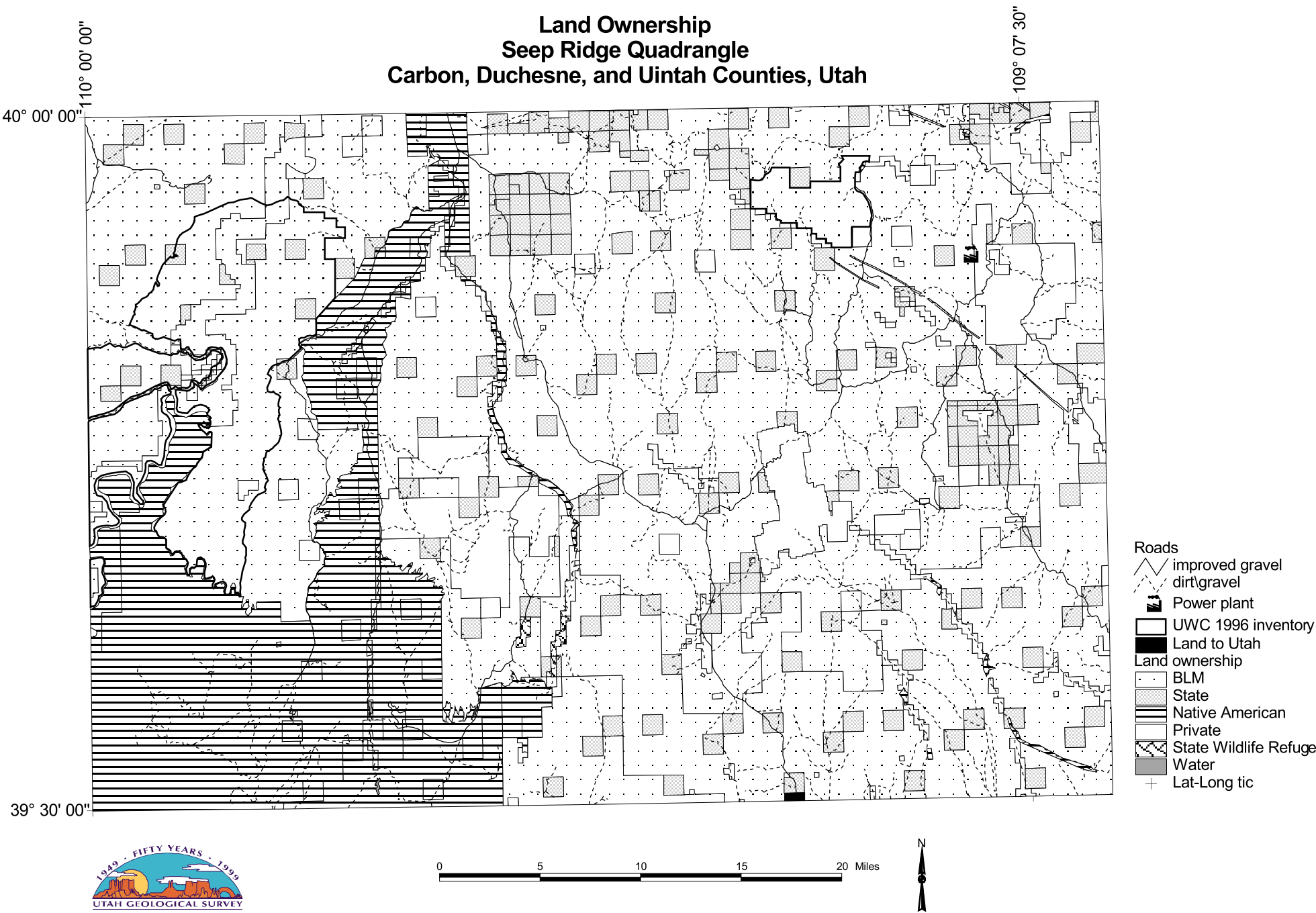
Water Rights Locations Vernal Quadrangle Duchesne and Uintah Counties, Utah



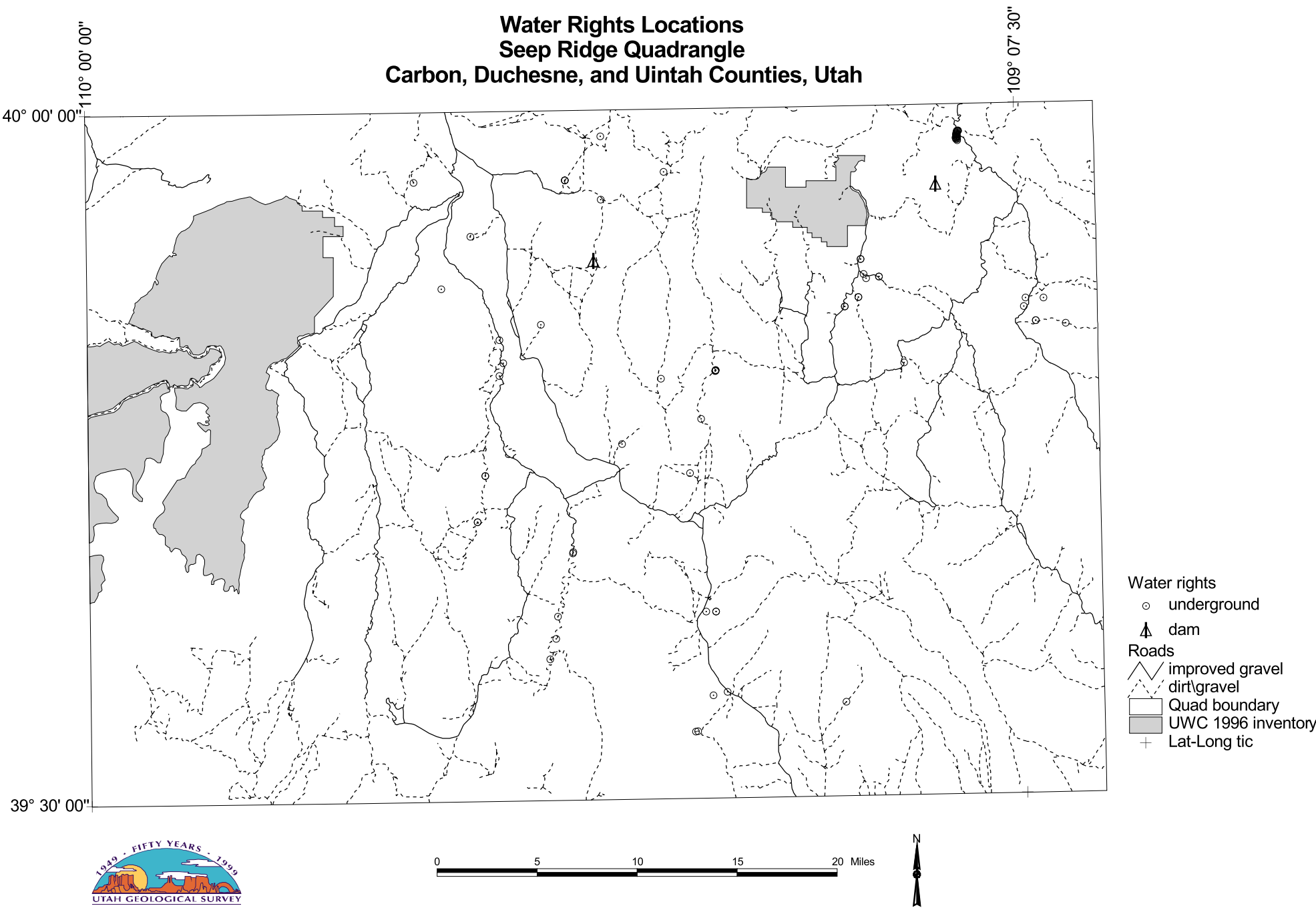
Energy and Mineral Locations Seep Ridge Quadrangle Carbon, Duchesne, and Uintah Counties, Utah



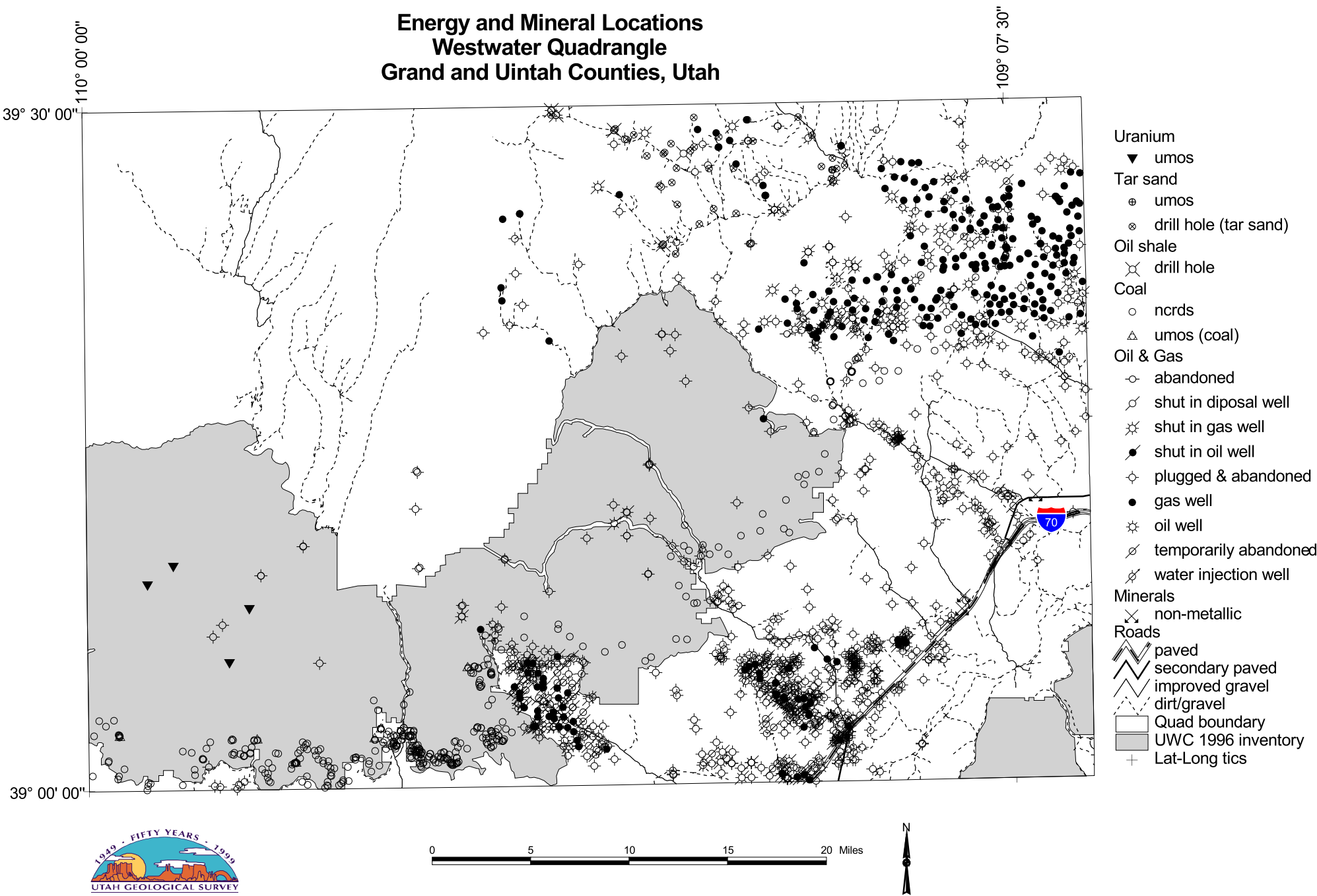
Land Ownership Seep Ridge Quadrangle Carbon, Duchesne, and Uintah Counties, Utah



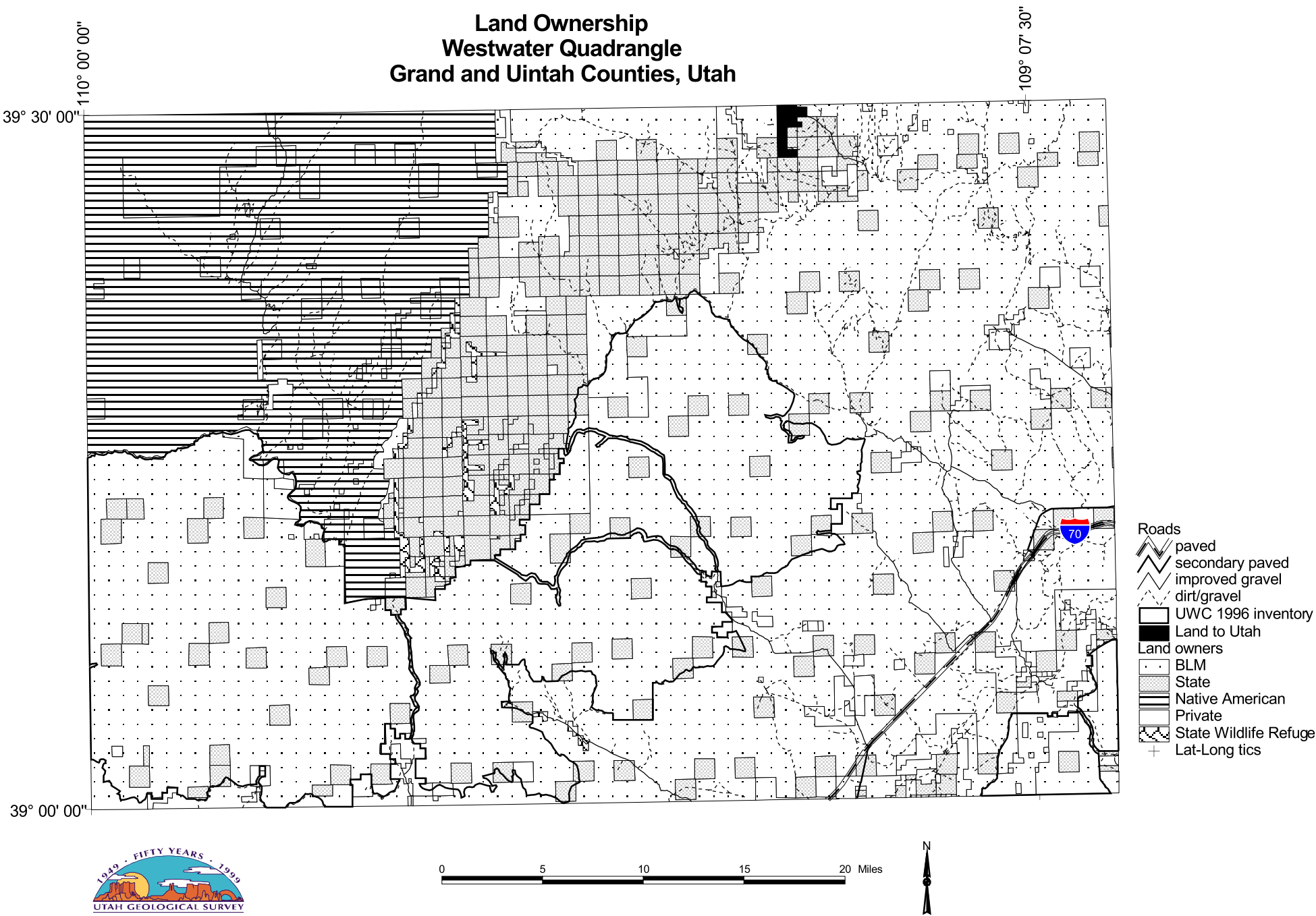
Water Rights Locations Seep Ridge Quadrangle Carbon, Duchesne, and Uintah Counties, Utah



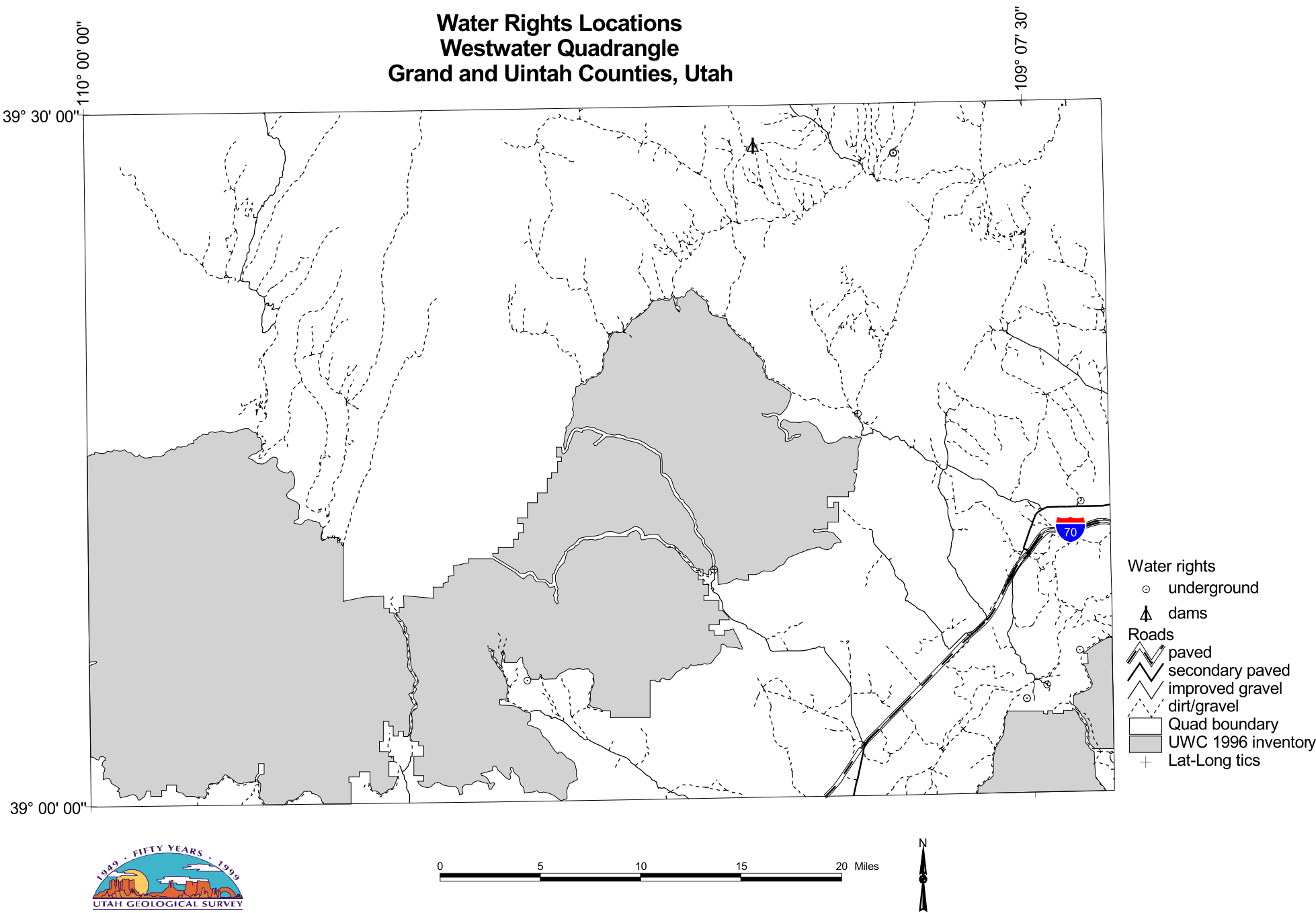
Energy and Mineral Locations Westwater Quadrangle Grand and Uintah Counties, Utah



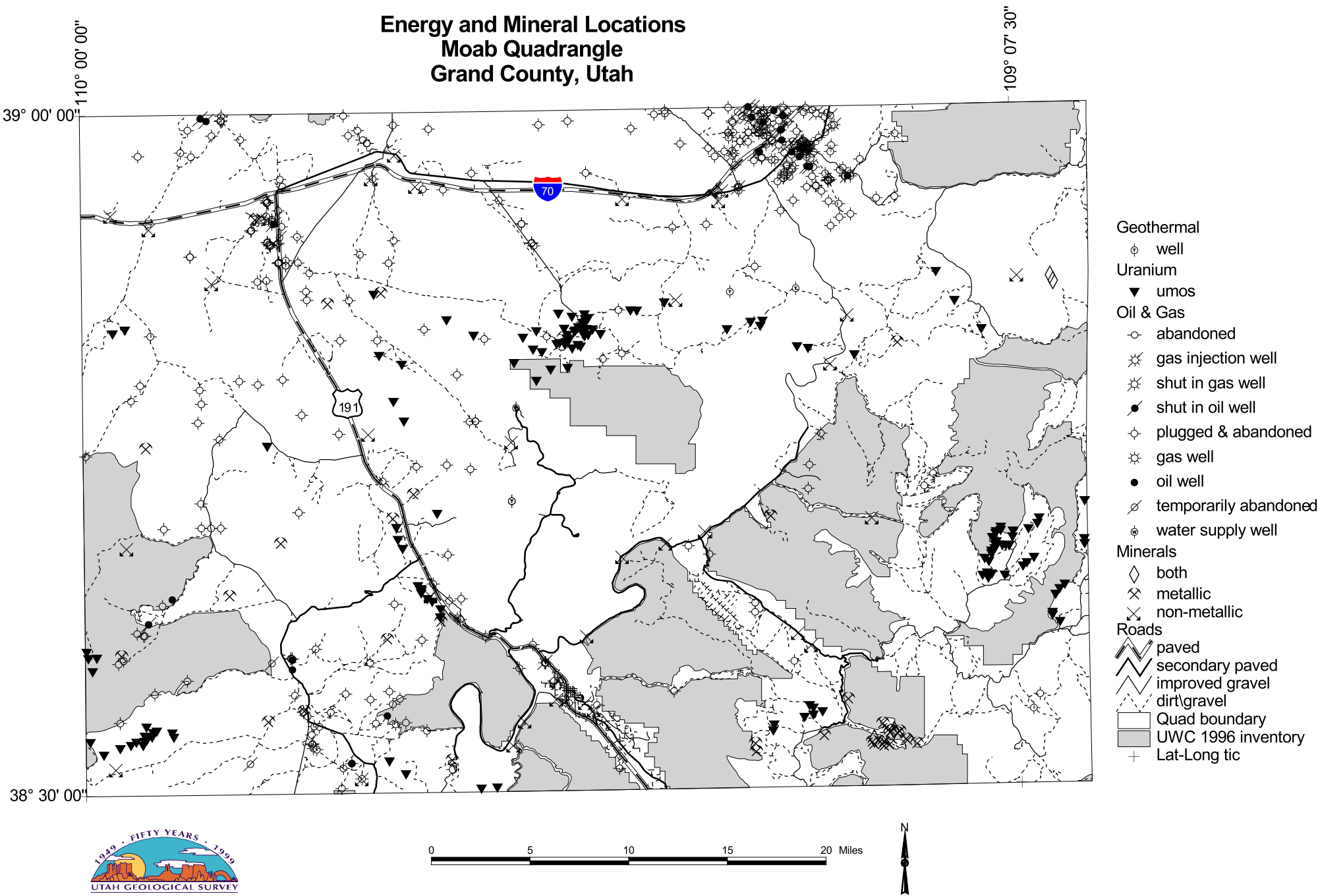
Land Ownership Westwater Quadrangle Grand and Uintah Counties, Utah



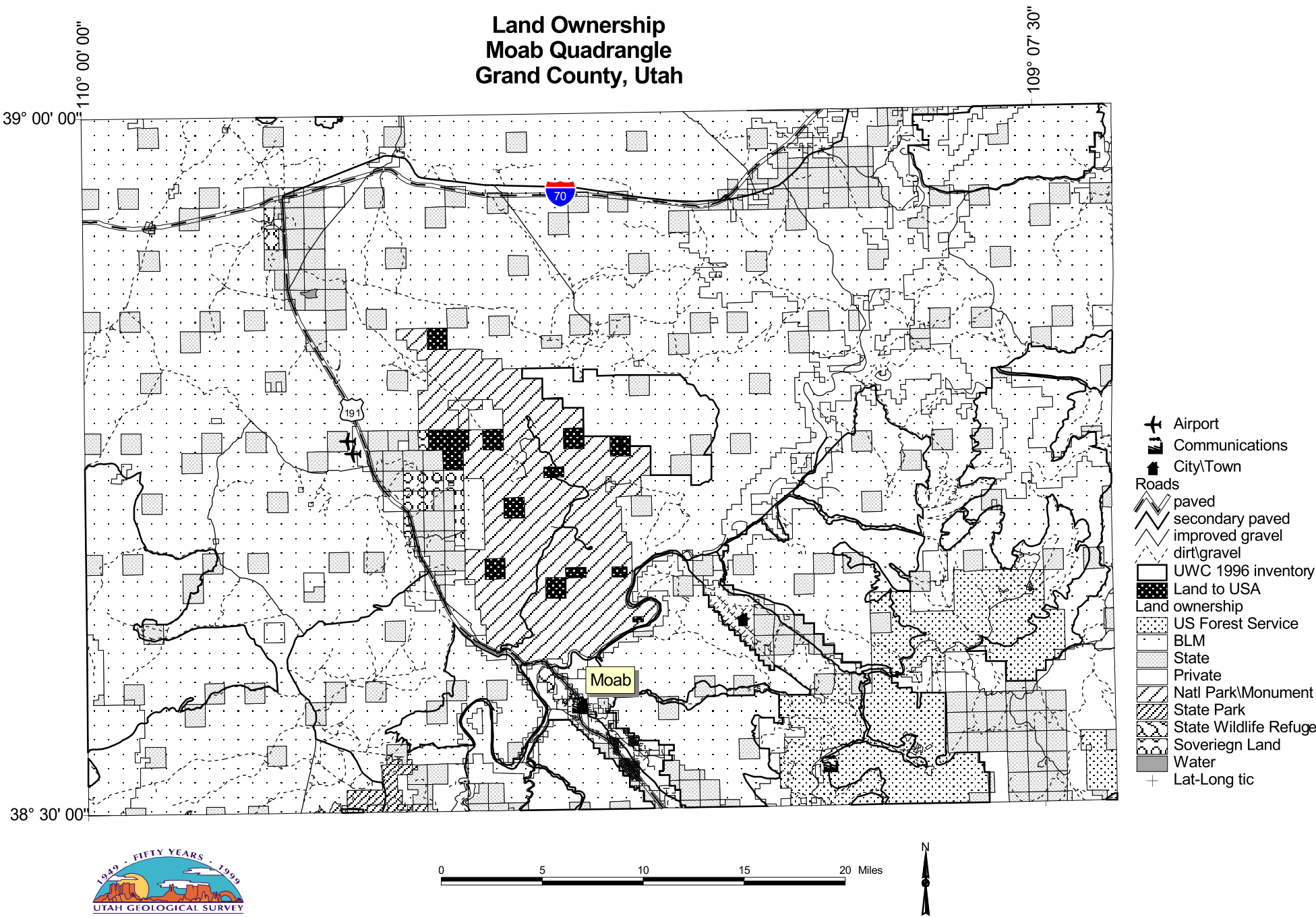
Water Rights Locations
Westwater Quadrangle
Grand and Uintah Counties, Utah



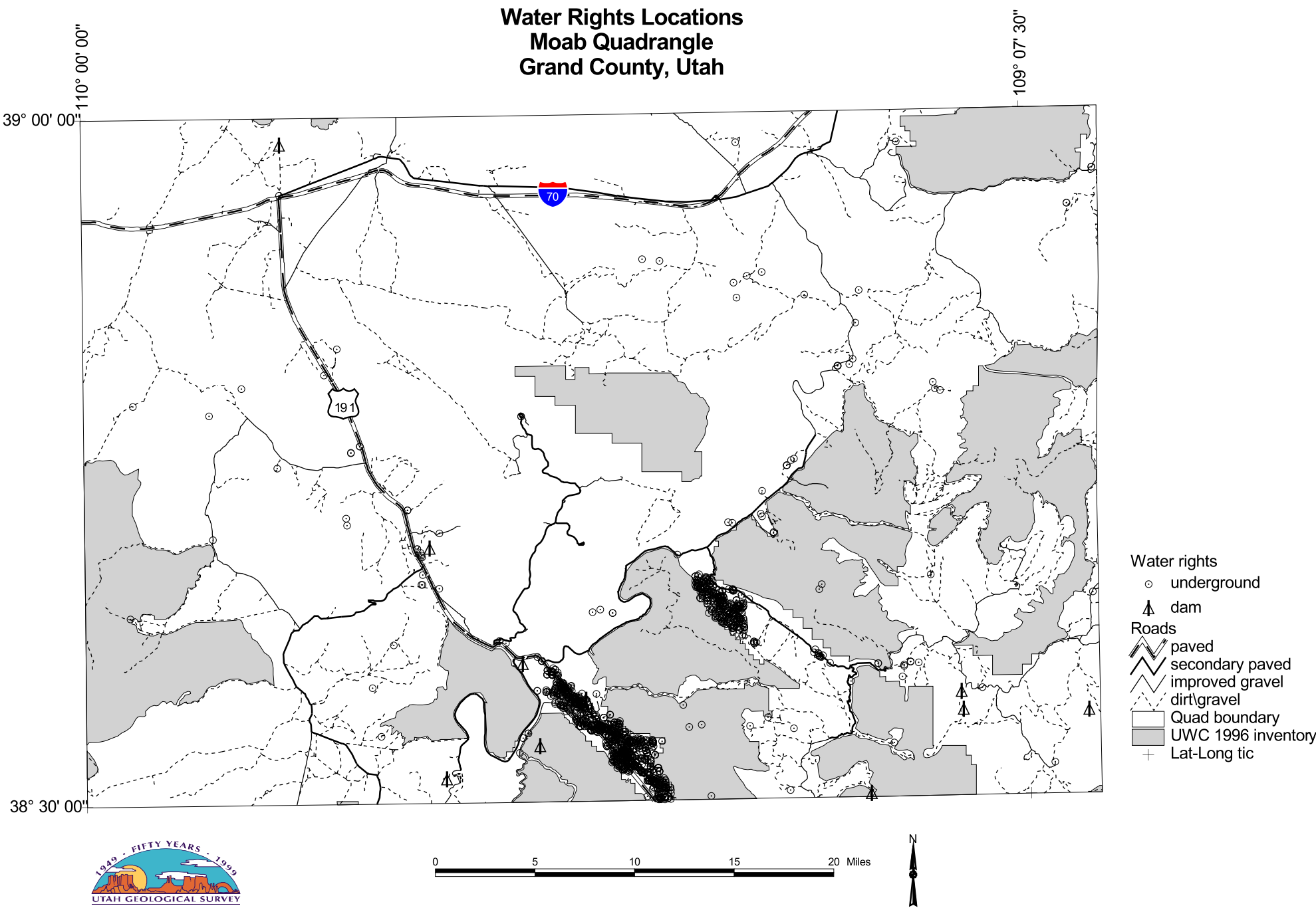
Energy and Mineral Locations Moab Quadrangle Grand County, Utah



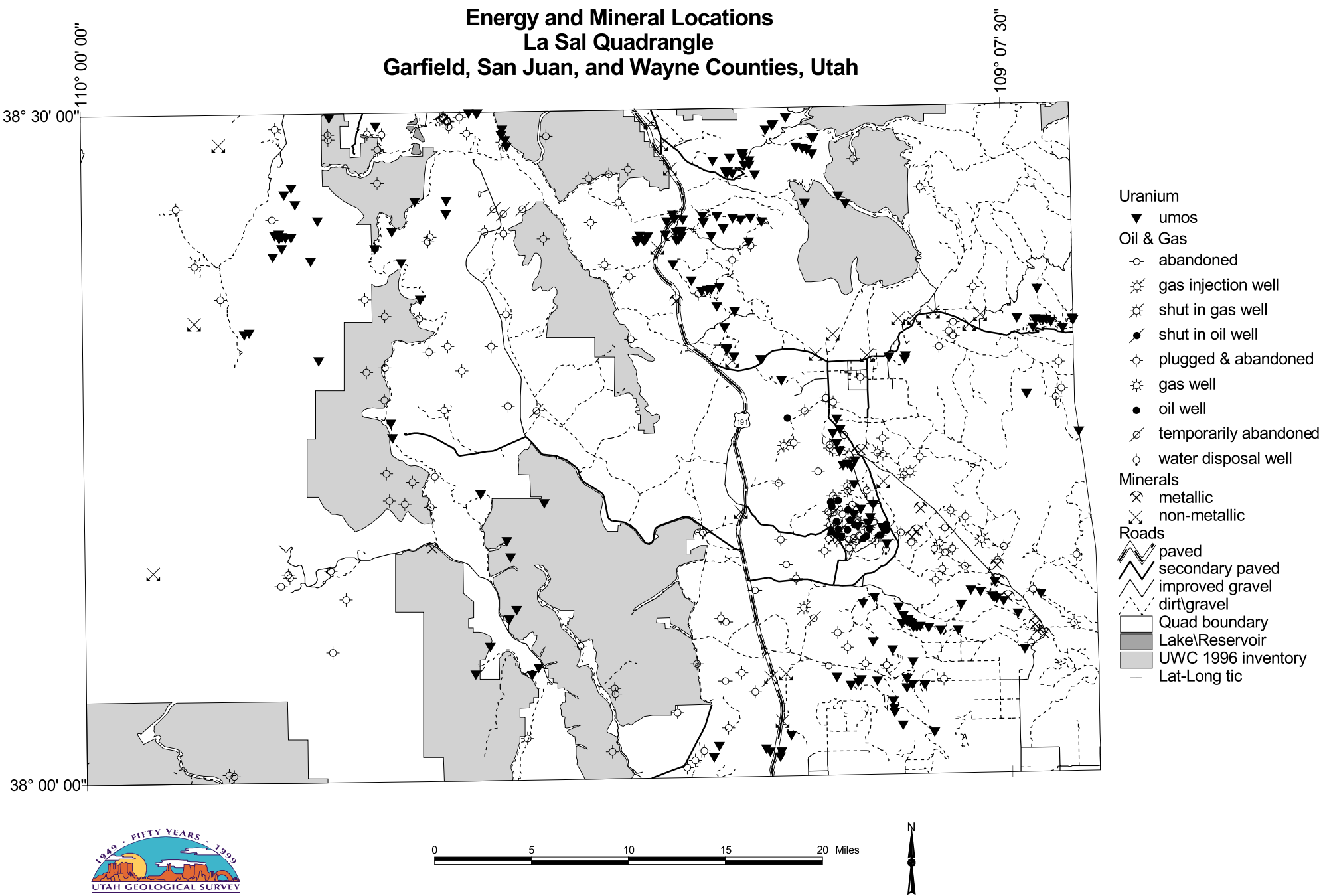
Land Ownership Moab Quadrangle Grand County, Utah



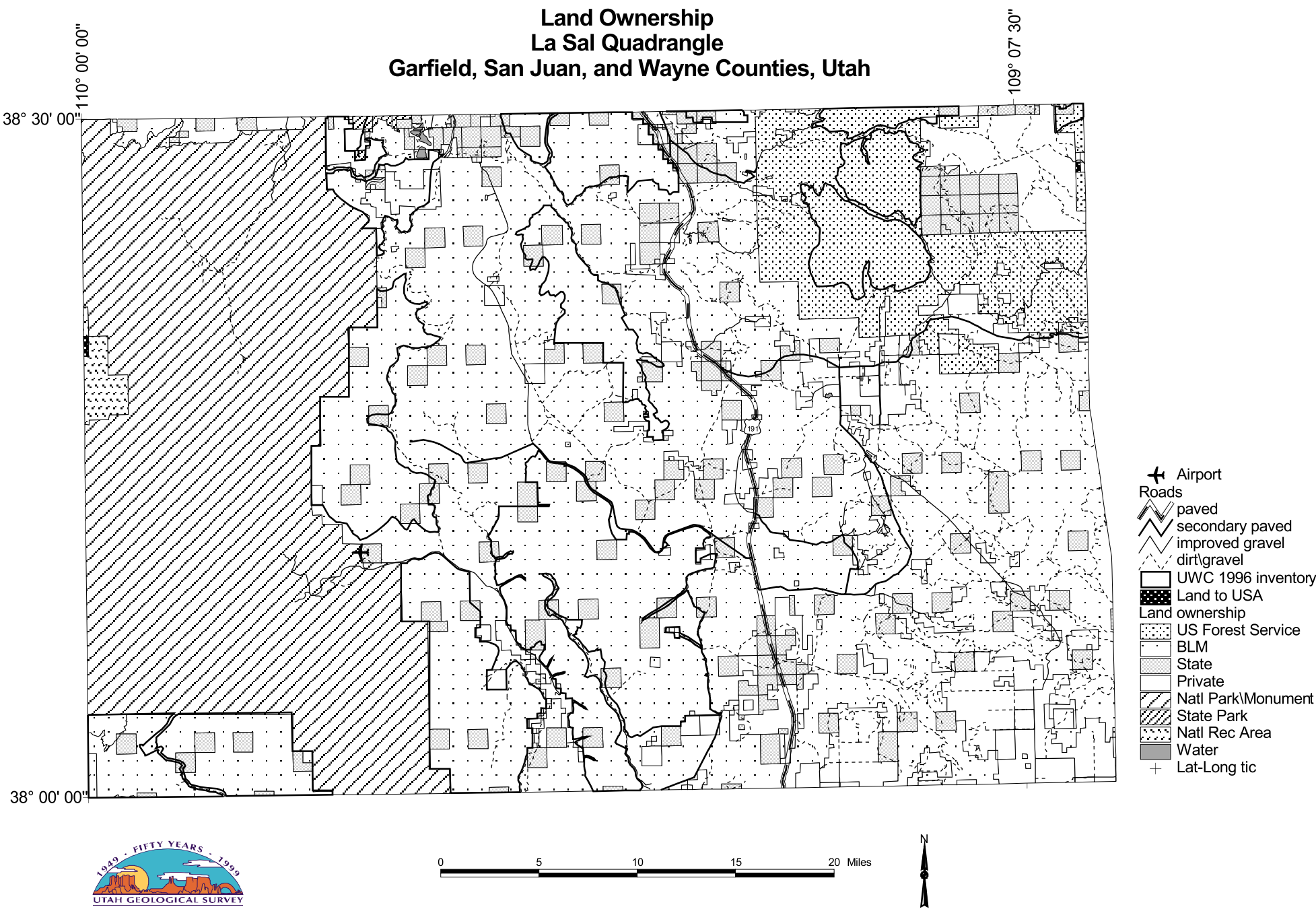
Water Rights Locations Moab Quadrangle Grand County, Utah



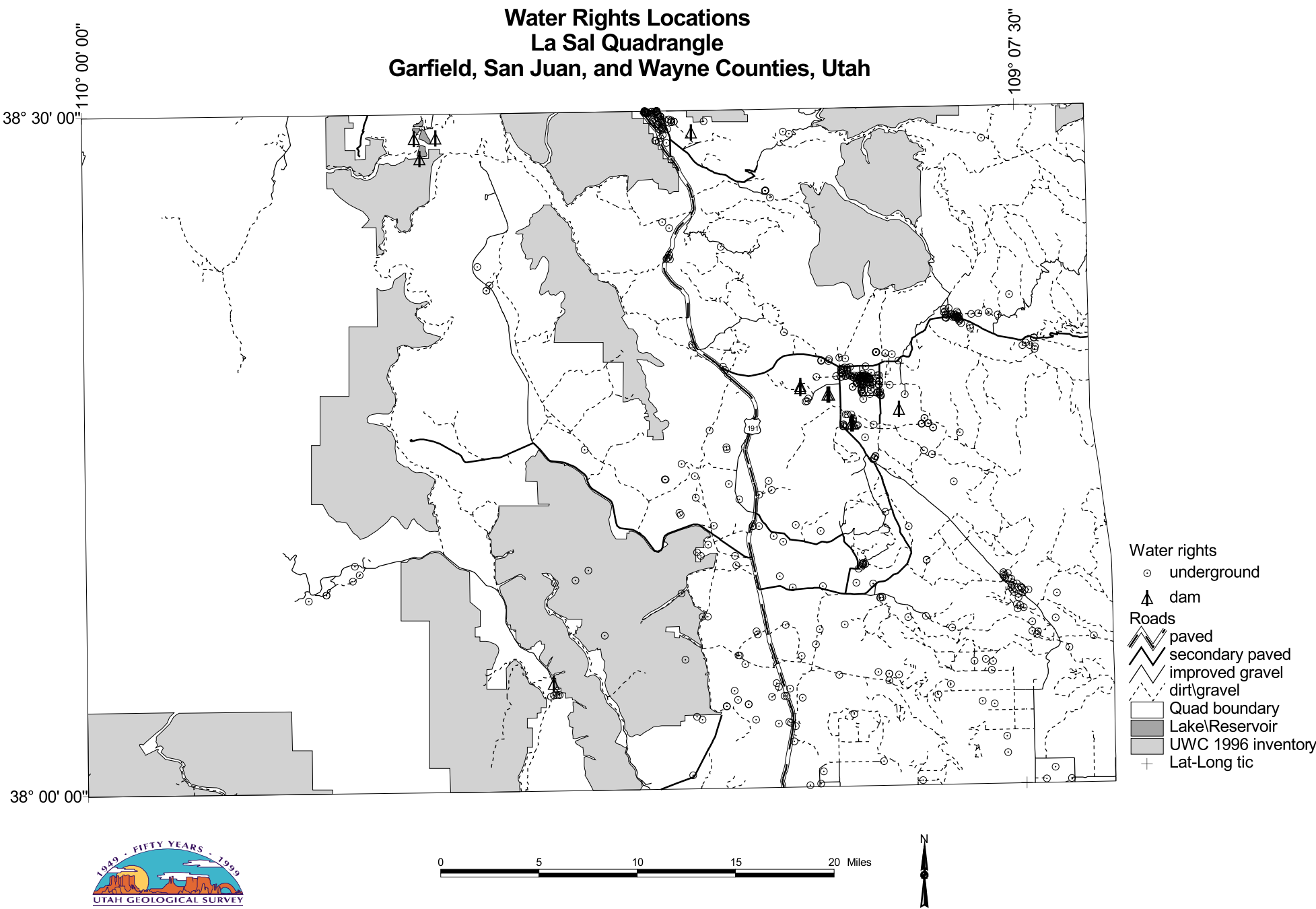
Energy and Mineral Locations La Sal Quadrangle Garfield, San Juan, and Wayne Counties, Utah



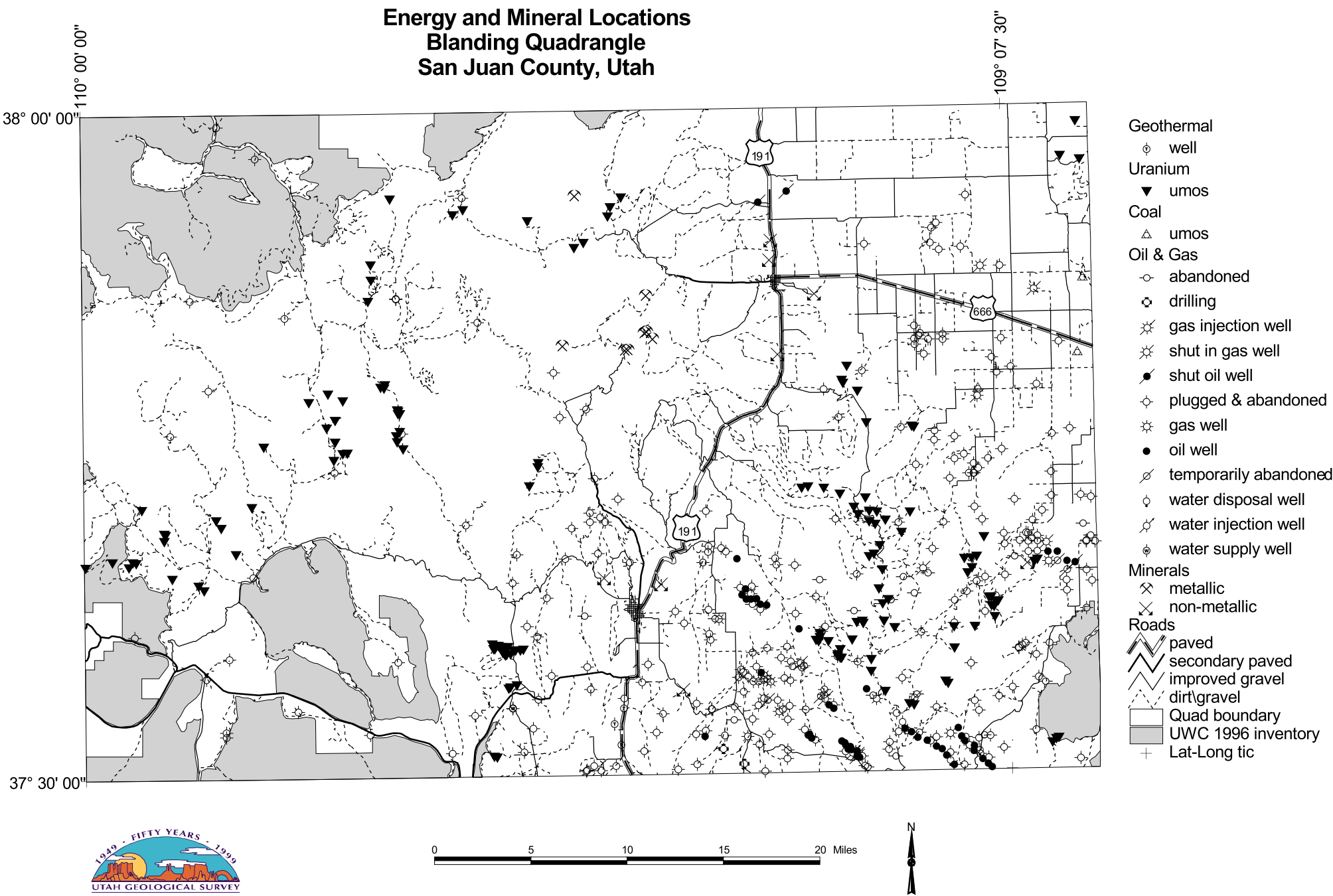
Land Ownership La Sal Quadrangle Garfield, San Juan, and Wayne Counties, Utah



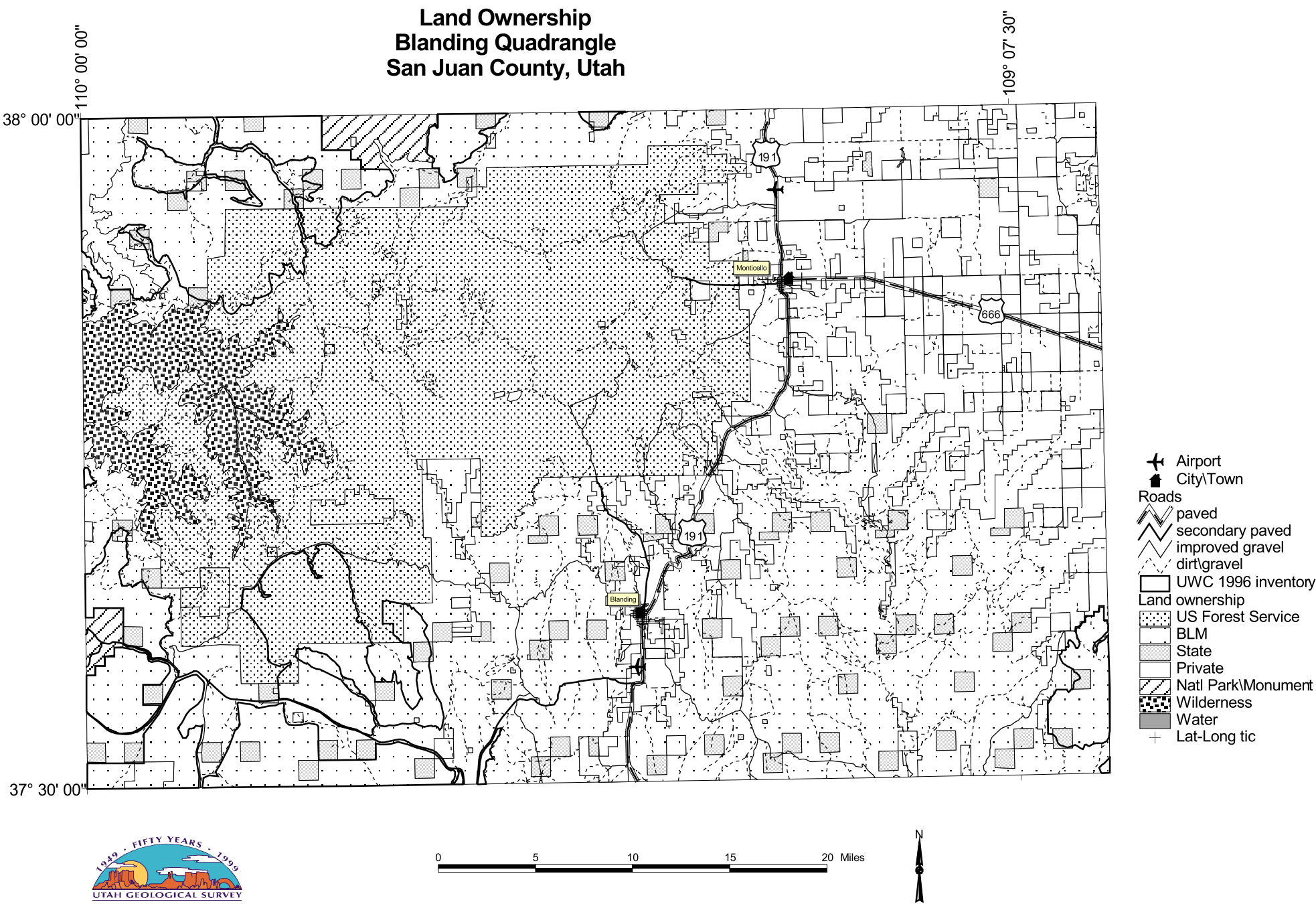
Water Rights Locations La Sal Quadrangle Garfield, San Juan, and Wayne Counties, Utah



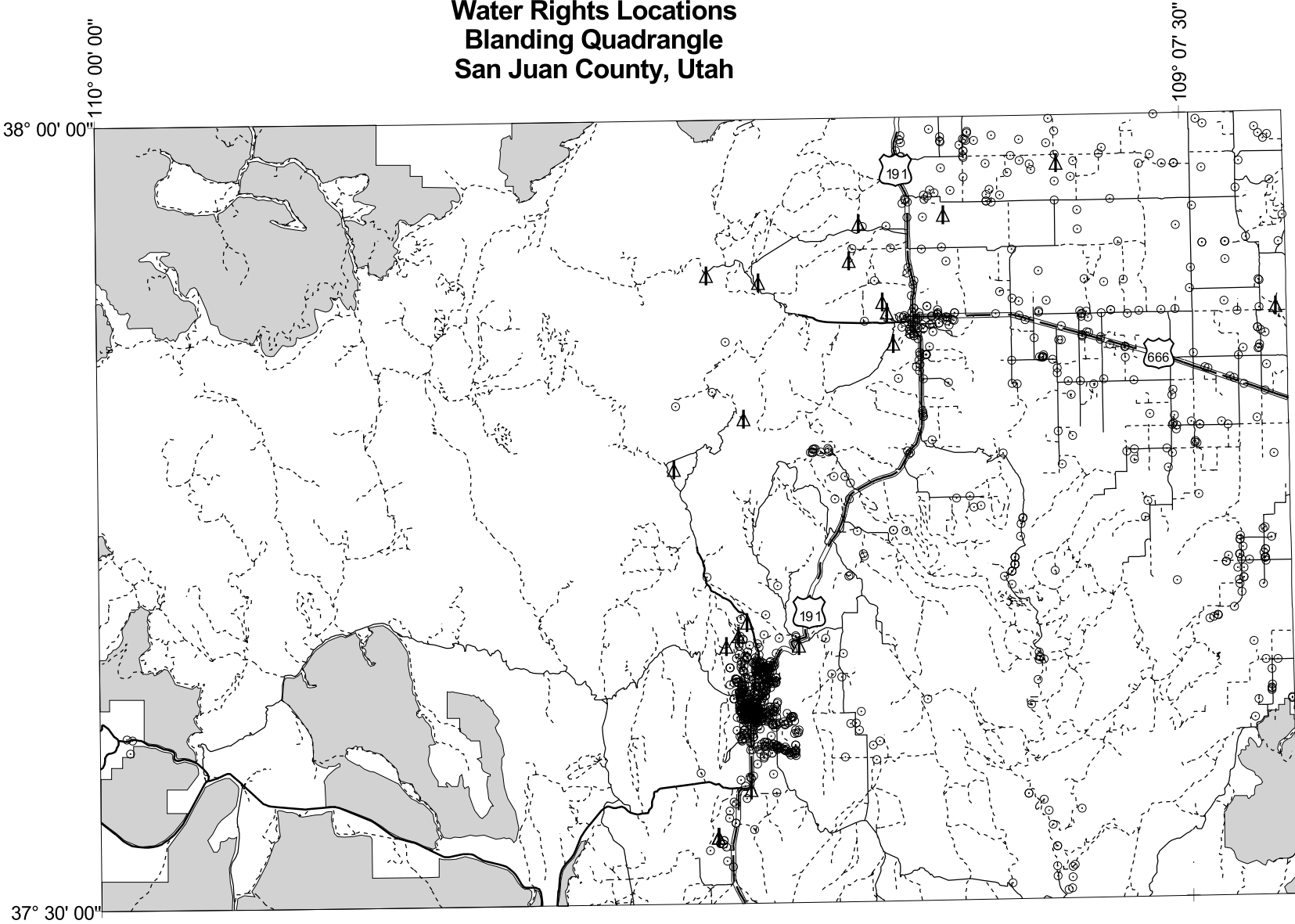
Energy and Mineral Locations Blanding Quadrangle San Juan County, Utah



Land Ownership Blanding Quadrangle San Juan County, Utah



Water Rights Locations Blanding Quadrangle San Juan County, Utah



Water rights

○ underground

▲ dam

Roads

— paved

- - - secondary paved

... improved gravel

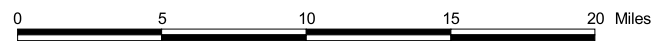
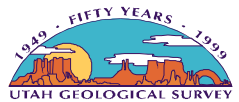
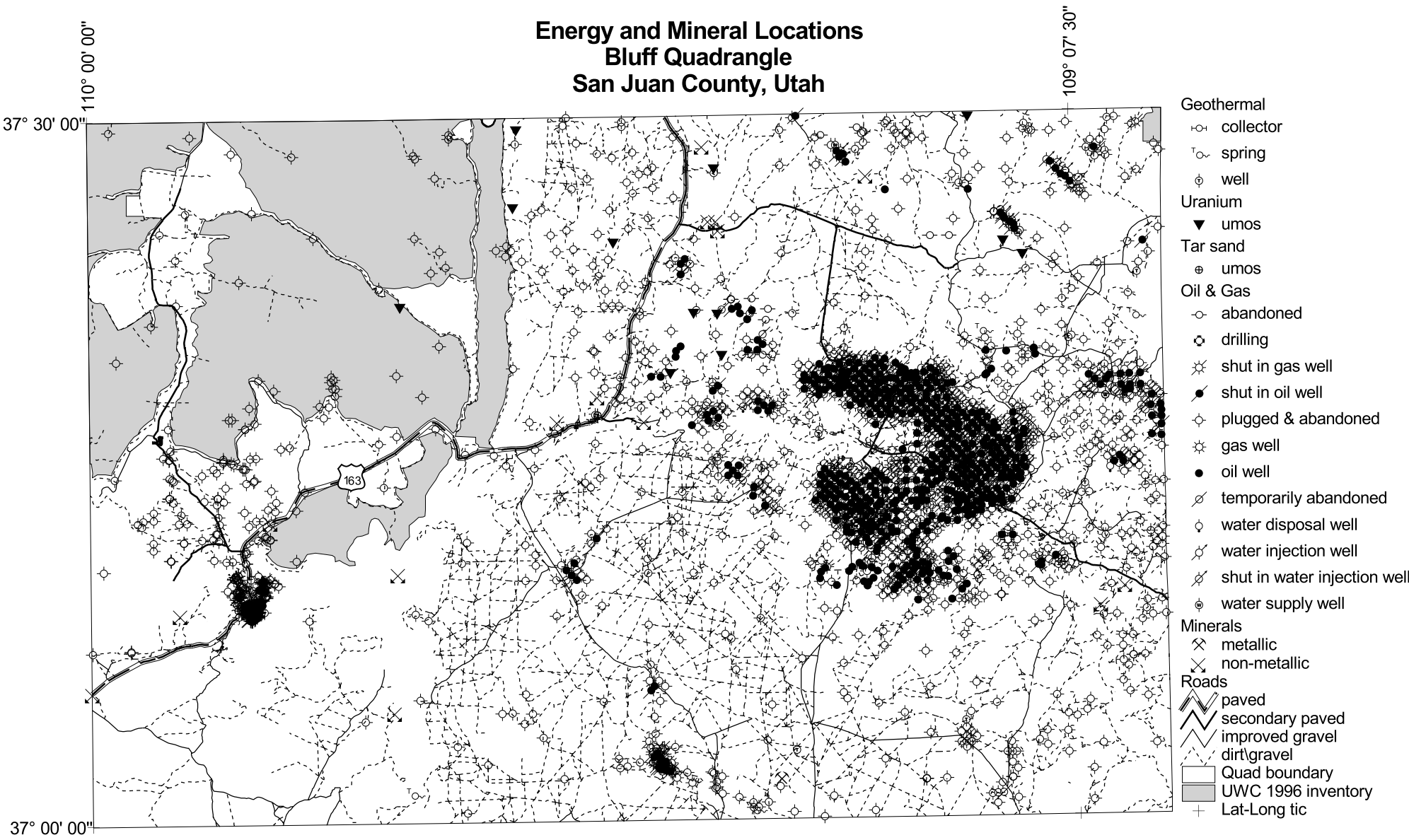
- · - · dirt/gravel

□ Quad boundary

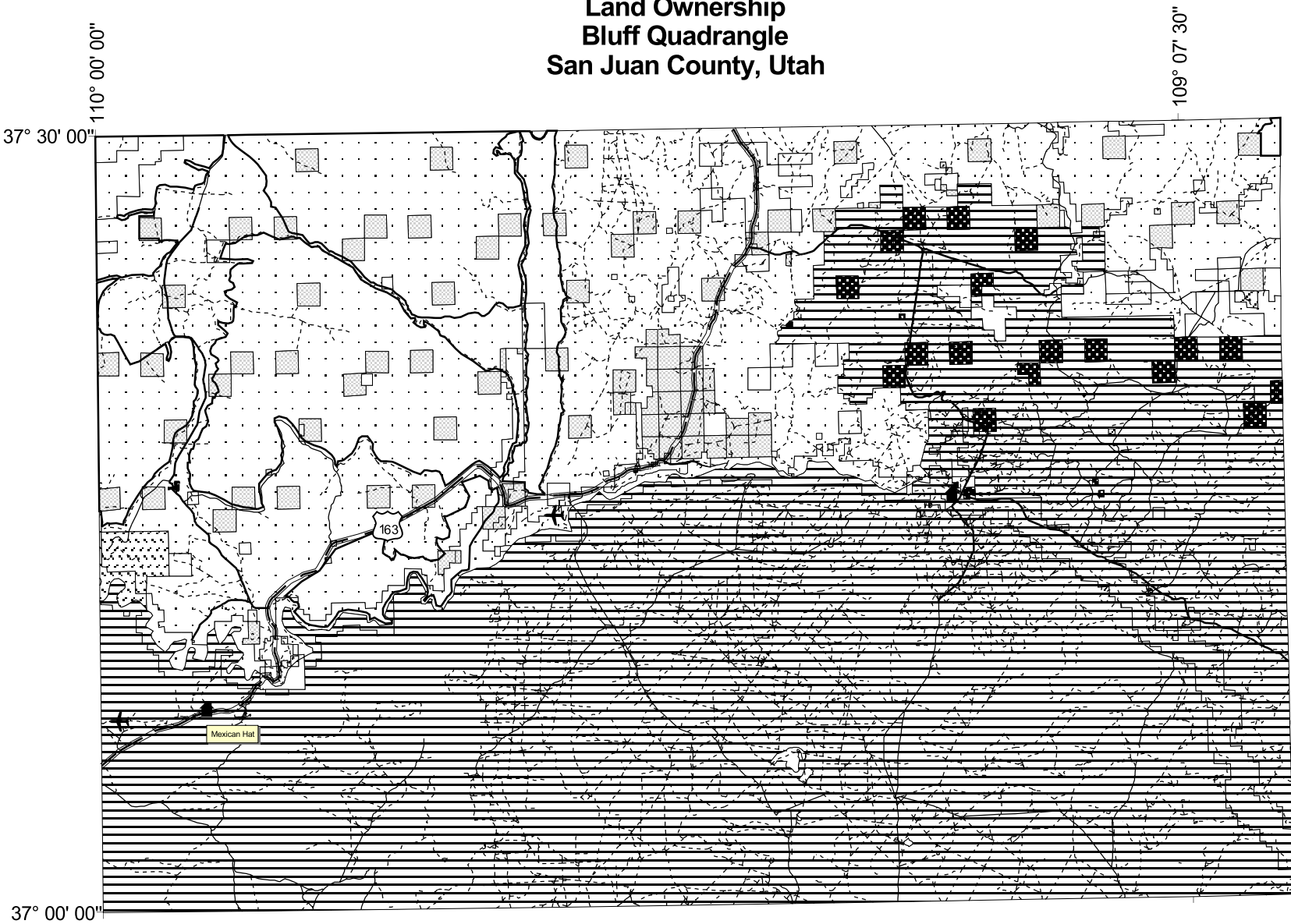
■ UWC 1996 inventory

+ Lat-Long tic

Energy and Mineral Locations Bluff Quadrangle San Juan County, Utah



Land Ownership Bluff Quadrangle San Juan County, Utah



Roads

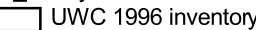
- paved
- secondary paved
- improved gravel
- dirt/gravel



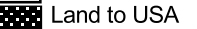
Airport



City/Town



UWC 1996 inventory



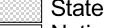
Land to USA



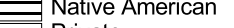
Land ownership



BLM



State



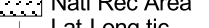
Native American



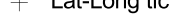
Private



Natl Park/Monument



Natl Rec Area



Lat-Long tic

Water Rights Locations Bluff Quadrangle San Juan County, Utah

